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From: Butts, Sally
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[GSENM Memorandum for the President August 15 1996.pdf](#)

Hi Cally,

In addition to the google drive documents I shared with you earlier today, and hard copy documents I'll have for you next week, please see the attached Memo to the President. It's included in the documents we submitted for the monuments review. The Memo includes the list of all of the objects for which the monument was designated and also a bibliography of resources and the rationale for the area needed to protect the objects.

Sally

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THE SECRETARY OF THE INTERIOR
WASHINGTON

August 15, 1996

Memorandum for the President

INTRODUCTION AND SUMMARY

In response to your request, attached as Exhibit A is a draft proclamation, with an accompanying map,¹ to establish the Grand Staircase-Escalante National Monument in southern Utah. This memorandum describes (a) the basis for my recommendation that you establish the Grand Staircase-Escalante National Monument, (b) the proclamation, and (c) the resources, ownership patterns and management issues present in the area. After careful review of the record, I am convinced that the objects satisfy the criteria for establishment of a national monument pursuant to the Antiquities Act, and that the boundaries of the land reserved represent the smallest area compatible with the proper care and management of those objects.

THE ANTIQUITIES ACT

Section 2 of the Antiquities Act, 16 U.S.C. § 431, authorizes the President to establish as national monuments "objects of historic or scientific interest that are situated upon the lands owned or controlled by the government of the United States." It further authorizes the President to reserve, as part of the monument, land that is "the smallest area compatible with the proper care and management of the objects to be protected."

A. Objects of Historic or Scientific Interest

The proposed Grand Staircase-Escalante National Monument is located on the Colorado Plateau in south-central Utah, within the drainage of the Colorado River. Elevation ranges from 4,100 to 8,200 feet

¹ The boundaries of the proposed monument are drawn on the map entitled "Grand Staircase-Escalante National Monument," which would be attached to, and made a part of, your proclamation. "A reduced version of this map suitable for publication would be promptly prepared should you decide to proceed. Because of the acreages involved, it is not practicable, as of this date, to describe the boundaries of the land reserved as a part of the monument either by metes and bounds or by reference to designated subdivisions on official surveys shown on publicly recorded plats or maps. The BLM will produce a description conforming to the BLM Specifications for Descriptions of Tracts of Land for Use in Land Orders and Proclamations as soon as practicable should you decide to proceed.

above sea level. The map appended to the proclamation attached as Exhibit A sets out the boundaries of the land reserved for the monument. The area covers about 1.7 million acres. The proclamation attached to this memo as Exhibit A vividly describes objects in the area that warrant protection as a monument, and Exhibit B lists historic and scientific objects in this area. Attached as Exhibit C is a bibliography of the principal sources of information relied upon in making this recommendation.

The area recommended to be included in the monument has remained isolated and relatively undisturbed and for the most part unroaded. Most of the land within the outer boundaries of the proposed monument is federally owned. The nonfederal land is owned mostly by the State of Utah in scattered 640 acre sections, the result of Utah's statehood land grant. Currently, the federal lands in the area are used primarily for scientific study, primitive recreation, and livestock grazing.

In the last few decades the area in question has been evaluated for the possibility of providing greater recognition of and legal protection for its resources. In the late 1970s, the area was evaluated for its "wilderness characteristics" under FLPMA, and several wilderness study areas, totaling about 900,000 acres, were established in the area covered by the proclamation. The documentation of these areas assembled in the wilderness inventory and study process has identified many of the objects of scientific and historic interest within the monument area.

Nearby federal lands have been recognized by Congress to contain scientific and historic features worthy of protection. For example, in 1972 Congress created the Glen Canyon National Recreation Area (GCNRA) in order to, among other things, "preserve [its] . . . scientific, and historic features contributing to public enjoyment of the area." 16 U.S.C. § 460dd. The GCNRA forms the eastern and part of the southern boundary of the area covered in the attached proclamation. Similarly, Congress established Canyonlands National Park to the northeast in 1964 in recognition of, among other things, its "scientific" and "archaeologic" features, 16 U.S.C. § 271.

More than one hundred national monuments have been established by Presidents over the past ninety years. Attached as Exhibit D is a complete list. Exhibit E lists the monuments by President. Exhibit F is a list of the monuments found wholly or partially on the Colorado Plateau, in the general vicinity of this monument. Most of the proclamations establishing these monuments cited geologic, paleontologic, archaeologic and other features similar to those in the attached proclamation. Many of them included substantial land areas, and/or were enlarged by subsequent proclamations or acts of Congress. A number of them ultimately were designated as National Parks by Congress.

For example, what is now Zion National Park to the west of the monument was originally established by President Taft as Mukuntuweap National Monument in 1909 in order to protect its "many natural features of unusual archaeologic, geologic, and geographic interest" (Proclamation No. 877, 36 Stat. 2498). President Wilson enlarged it in 1918 (Proclamation No. 1435, 40 Stat. 1760), and Congress made it into a national park in 1919 (16 U.S.C. § 344, 41 Stat. 356). President Franklin Roosevelt established Zion National Monument in an adjacent area in 1937 (Proclamation No. 2221, 50 Stat. 1809), and Congress merged it into Zion National Park in 1956 (70 Stat. 527).

President Hoover established Arches National Monument to the northeast in 1929, citing its "unique wind-worn sandstone formations, the preservation of which is desirable because of their educational and scenic value" (Proclamation No. 1875, 46 Stat. 2988). Arches was later expanded by Presidents Franklin Roosevelt and Johnson (Proclamation Nos. 2312 and 3887), and Congress made it a National Park in 1971 (16 U.S.C. § 272, 85 Stat. 422). President Roosevelt established Capitol Reef National Monument to the immediate east in 1938 to protect its "narrow canyons displaying evidence of ancient sand dune deposits of unusual scientific value, and . . . various other objects of geological and scientific interest" (Proclamation No. 2246, 50 Stat. 1856). Presidents Eisenhower and Johnson expanded it (Proclamation Nos. 3249 and 3888), and Congress made it a National Park in 1971 (85 Stat. 739). President Harding set aside Bryce Canyon National Monument to the immediate north and northwest in 1923, citing its "unusual scenic beauty, scientific interest and importance" (Proclamation No. 1664, 43 Stat. 1914), and President Hoover expanded it twice, Proclamation Nos. 1930, 1952, 46 Stat. 3042, 47 Stat. 2455. Congress made it Utah National Park in 1924 (43 Stat. 593) and four years later changed its name to Bryce Canyon National Park (45 Stat. 147).

Farther west on the Colorado Plateau, Cedar Breaks National Monument was established by Franklin Roosevelt in 1933 to protect its "spectacular cliffs, canyons, and features of scenic, scientific, and educational interest" (Proclamation No. 2054, 48 Stat. 1705), and its boundary was subsequently revised by Congress in 1942 (56 Stat. 141) and 1961 (75 Stat. 198). President Theodore Roosevelt established Natural Bridges National Monument in 1908 to preserve "extraordinary examples of stream erosion" and "prehistoric ruins" (Proclamation No. 804, 35 Stat. 2183), and Presidents Taft, Wilson and Kennedy enlarged it (Proclamation Nos. 881, 1323, 3486). Rainbow Bridge National Monument was established by President Taft in 1910, who described it as "of great scientific interest as an example of eccentric stream erosion" (Proclamation No. 1043, 36 Stat. 2703).

The courts (including the U.S. Supreme Court) have occasionally been asked to review exercises of Presidential authority under the

Antiquities Act. They have uniformly upheld establishment of national monuments, e.g.:

Grand Canyon National Monument, on the basis of its unique geology, scientific interest and general public appeal, Cameron v. United States, 252 U.S. 450 (1920);

Devil's Hole National Monument, on the basis of its unique resident pupfish species and the hydrology of the water pool, Cappaert v. United States, 426 U.S. 128 (1976);

Jackson Hole National Monument, on the basis of the interrelationship of living systems, the geologic features and the history of the area, State of Wyoming v. Franke, 58 F. Supp. 890 (D. Wyo. 1945); and

Channel Islands National Monument, expanded on the basis of its varied marine life, fossils, and geology, United States v. California, 436 U.S. 32, 36 (1978).

B. Land Area Reserved for the Proper Care and Management of the Objects to be Preserved

The Antiquities Act authorizes the President, as part of his declaration of a national monument, to reserve land, "the limits of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected." 16 U.S.C. § 431 (emphasis added). The area proposed for reservation has been carefully delineated, based on review of available information, to meet the goals of effectively caring for and managing the objects in perpetuity.

The area includes the archaeologic, biologic, paleontologic, geologic, and historic objects identified in the Proclamation and Exhibits B and C accompanying this letter. Some of these objects are present throughout the entire monument area, others are scattered within it, and several lie along the borders of the area. Many objects also overlap. Thus, the entire area is necessary for protection of the objects. Even if it were possible to reserve a smaller area by isolating certain objects, such a fragmentation of the proposed monument would endanger many of the objects, undermine the purposes of the monument itself, and create substantial impediments to effective management of the monument.

The area of the proposed monument is based on the conservation needs of the objects to be protected. Some of the objects identified are present throughout the area, and others cover immense, interconnected areas of land or depend for their scientific value on their location at various sites or elevations. Some of the scientific and historic value of certain objects comes from their scarcity and fragility or the fact that they have remained relatively undisturbed and unchanged. Preservation of

such objects (the biologic and archaeologic resources are examples) requires, among other things, protection of land surrounding them in order to maintain the relatively remote conditions that have made their continued existence possible.

Furthermore, the scientific value of many of the objects within the monument requires preservation of areas large enough to maintain the objects and their interactions. For example, species that exist because of the area's extraordinary geologic and environmental stability are distributed according to the geologic features to which they have adapted. Much of the biologic and other scientific interest in the area results from the variety of geologic substrates across elevational gradients. Many species must range within and through the area and neighboring protected areas to maintain viable populations and their role in the ecosystem. Thus, protection of the aggregate area is necessary for proper care of the objects. In addition, a number of the objects are distributed through multiple parts of the area; significant fossils, for example, are distributed throughout the Dakota, Tropic Shale, Straight Cliffs, Wahweap and Iron Springs Formations. Management of a patchwork of reserved lands would be impractical, as it would make it more difficult to care for the objects, reduce options for natural resource management and lead to inconsistent resource management standards for overlapping resources. In short, our analysis indicates that reservation of a smaller area would undermine proper care and management of the monument.

There is ample precedent for declaring analogous geologic, biologic and historic objects to be protected under the Antiquities Act, and reserving correspondingly large areas of land as part of their monument designations. President Theodore Roosevelt was the first President to exercise such presidential discretion in his reservation of over 800,000 acres as the Grand Canyon National Monument. More recent examples include the Wrangell-St. Elias National Monument, which encompassed 10,950,000 acres to protect an assemblage of mountain peaks, including Mount St. Elias and the Mount Wrangell volcano, and the flora and fauna of the Bremner and Chitina River Valleys. The Yukon Flats National Monument, consisting of approximately 10,600,000 acres, encompassed the largest and most complete example of an interior Alaskan solar basin with its associated ecosystem. In closer proximity, 1.6 million acres were initially reserved for the Death Valley National Monument, which Presidents subsequently expanded and Congress expanded again and protected as Death Valley National Park. At 1.7 million acres, the area that I recommend for reservation is comparable in size to some of the earlier Monuments that protected natural resources for scientific and historic purposes.

Many relatively large Monuments were later expanded because they were found to be too small for the care and management of their objects or associated objects. The history of Zion National Monument and Park, described above, provides one example. The area

of land that I recommend you reserve is based on our current understanding of the extent of, and interrelationships between, the objects to be protected.

Finally, although some of the objects to be protected in the proposed monument also exist in surrounding areas, I recommend that you reserve only the identified acreage for the monument. Many of these other areas are already protected under the jurisdiction of various federal or state agencies, with whom the Bureau of Land Management (the BLM) will work to assist in the conservation of shared resources. For example, objects in the eastern and southern end of the Escalante region not included in the proposed monument are subject to protective management in Glen Canyon Recreation Area and Capitol Reef National Park. While additional areas of the Grand Staircase also could have been included in the monument, by limiting the monument and its reserved land to that proposed, a portion of each aspect of the Grand Staircase will be federally protected in some manner, whether within this monument or within Zion or Bryce Canyon National Parks. Finally, the boundaries have been drawn to exclude many non-federal lands, and, for effective management, often lie along the border of BLM lands. In sum, based on available information, I recommend that you reserve only the area delineated on the map accompanying Exhibit A.

LEGAL EFFECTS OF THE PROCLAMATION

I direct your attention to several significant aspects of the proclamation attached as Exhibit A. First, it would reserve only the federal lands in the area, because the Antiquities Act applies only to "objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States." 16 U.S.C. § 431.

Second, the proclamation would be subject to valid existing rights. Thus, to the extent a person or entity already owns a valid property right in the federal lands or resources within the area, the exercise of such rights may be regulated in order to protect the purposes of the monument, but the regulation must respect such rights.

Third, the proclamation withdraws the federal lands in the area from "entry, location, selection, sale, leasing, or other disposition under the public land laws, other than by exchange that furthers the protective purposes of the monument." This withdrawal prevents the location of new mining claims in the area under the Mining Law, and prevents the Secretary of the Interior from exercising discretion under the mineral leasing acts and related laws to lease or sell federal minerals in the area.

Fourth, the proclamation would not reserve the water resources of the area under federal law pursuant to the so-called Winters

doctrine. Some of the objects to be protected under the proclamation (e.g., paleontology, archeology) do not require water. The proclamation would direct the Secretary to address, in the management plan described in the next paragraph, the extent to which water is necessary for the proper care and management of the objects of the monument, and the extent to which further action may be necessary pursuant to federal or state law to assure the availability of water.

Fifth, the proclamation would direct the Secretary to prepare a management plan for the area within three years. The plan, which would be prepared using the resource planning processes of FLPMA, would provide specific, on-the-ground guidance for protecting the objects within the monument, while permitting other uses to proceed where consistent with the purposes of the monument. While it is not possible, in advance of completion of the management plan, to set forth all the details of how existing or proposed future activities in the area would be affected in order to protect the purposes of the monument, the effects are described in general terms further below.

ADMINISTRATION OF THE MONUMENT

A. Management by the Bureau of Land Management

The federal lands in the area described in the attached proclamation are currently under the jurisdiction of the Bureau of Land Management (BLM) in the Department of the Interior. BLM manages the land pursuant to its basic organic authorities, the primary one being the Federal Land Policy and Management Act of 1976 (FLPMA).

I believe the area is best left under BLM management, and the attached proclamation would have the Secretary of the Interior manage the monument through the BLM. The result would be that management of the federal land would continue under the BLM's existing authorities, but subject to the overriding purpose of protecting the objects described in the proclamation. The establishment of the monument thus constitutes an overlay on the management regime otherwise applicable to lands managed by the BLM. It limits the management discretion that the BLM would otherwise have, by mandating protection of the historic and scientific objects within the national monument.

Congress has had before it over the past several years various bills that would designate parts of the area within the monument as wilderness. As noted earlier, about 900,000 acres in the monument have been classified as wilderness study areas pursuant to FLPMA, and managed by law to preserve their suitability for preservation as wilderness pursuant to the Wilderness Act of 1964, 16 U.S.C. §§ 1131-35, until Congress directs otherwise. See 43 U.S.C. § 1782.

The Wilderness Act of 1964 serves some values (e.g., outstanding opportunities for solitude and primitive and unconfined recreation) that are not addressed in the Antiquities Act of 1906 which, as noted earlier, serves to protect "objects of historic or scientific interest." Section 2(c) of the Wilderness Act does expressly acknowledge that a wilderness area "may . . . contain ecological, geological, or other features of scientific, educational . . . or historic value," and section 4(b) directs that wilderness areas "shall be devoted to the public purposes" of, among others, "scientific, educational, conservation, and historical use."

The extent of any overlap between wilderness management and protecting the objects within this monument would be addressed in the process of preparing a management plan for this monument. Nothing in the proclamation establishing this monument would prevent the Executive from recommending, or Congress from designating, areas within the monument as wilderness. Congress has, in fact, many times in the past designated wilderness within existing national monuments, including the following monuments: Badlands, Bandelier, Black Canyon of the Gunnison, Chiricahua, Craters of the Moon, Joshua Tree, Lava Beds, Misty Fjords, Organ Pipe Cactus, Pinnacles, and Saguaro.

B. Impact of monument designation on existing or planned activities in the area

1. Currently permitted livestock grazing (including existing pipelines, water impoundments and similar range improvements), hunting, fishing, off-road vehicle use, and similar activities

These activities would generally not be affected at current levels or in current areas of use. The only exceptions are (1) where the management plan to be prepared identifies specific places where such uses ought to be restricted or prohibited as necessary to protect the objects protected by the monument proclamation; or (2) where, in advance of completion of the management plan, the BLM land manager finds a clear threat from such a use to an object protected by the designation and the circumstances demand swift protective action. Except in emergency situations, any restrictions on the current levels or areas of use of such activities will be adopted only after a public process and only where necessary to protect the purposes of the monument.

Such uses would, of course, remain subject to existing laws and regulations other than the Antiquities Act, and therefore remain subject to regulation under such provisions for reasons other than establishment of the monument.

2. Use of existing rights-of-way (such as those established under R.S. 2477 or Title V of FLPMA)

As noted earlier, the area covered by the proclamation has very few roads. Use of existing rights-of-way would generally be subject to the same standards as described in the preceding section addressing currently permitted uses. In some cases existing rights-of-way may include valid existing rights. The exercise of such rights may be regulated in order to protect the purposes of the monument, but any regulation must respect such rights.

3. Activities on state or private land

The area within the boundaries of the proclamation contains approximately 180,000 acres of state land (mostly checkerboarded, four sections to each township, pursuant to the terms of the Utah statehood act). It also contains approximately 15,000 acres of private land. The monument designation would not apply to those lands. The legal principles applicable to the use of these lands prior to establishment of the monument would continue to apply.

4. Mining claims

New mining claims would be prohibited as the proclamation withdraws the area from the Mining Law. Existing mining claims that contain a valid discovery of a valuable mineral deposit as of the date of the designation would contain valid existing rights. The exercise of such rights may be regulated in order to protect the purposes of the monument, but any regulation must respect such rights. Activities on existing mining claims that lack a discovery may be regulated to protect the purposes of the monument.

5. Coal Mining Proposals

The proposed monument contains coal resources, particularly in the Kaiparowits coal field. Limited mining for local use dates back decades, but has cumulatively totaled only a few thousand tons. Test mining of a few thousand additional tons took place in the 1970s, but there has never been a major mine, nor any other major development, in the area proposed for the monument. There have, however, been a number of proposals over the years to open coal mines and build power plants in the region.

In the mid-1960s the Department issued numerous coal leases to private entities in the Kaiparowits coal field. A number of these leases have expired or will expire in the near future. The principal remaining lessees are PacifiCorp (successor to Utah Power & Light Co.) (about 18,000 acres) and Andalex Resources, Inc. (about 34,000 acres).

In the 1970s several mines and a large mine-mouth power plant were proposed in the area, but after extensive study and considerable public controversy, the proposals were withdrawn. The environmental impact statements prepared for the 1970s mines and power plant proposal were the first detailed cataloging of much of

the scientific and historic resources of the area in the proposed monument.

Andalex Resources is the only major holder of federal coal leases in this area that has put forward a concrete proposal to develop its leases. The Department, along with the State of Utah, is in the process of preparing a draft environmental impact statement (EIS) under the National Environmental Policy Act (NEPA), on Andalex's proposal to open a mine in the Smoky Hollow area on the south side of the Kaiparowits Plateau. The mine would involve about 25,000 acres of land in the area covered by the proclamation, as well as require construction of a transmission line and a microwave communication system, and improvement of an existing road or construction of a new road to the mine site.

Andalex's current plan is for the coal to be trucked off the mine site via an existing dirt road (to be paved) south through the GCNRA, or through construction of a new road west and south of the mine site through BLM land. Either route would connect to the existing paved highway at Big Water, Utah, south of the area. From there the coal would continue by truck to a rail line near Cedar City, Utah, or Moapa, Nevada, and from there by rail to customers in the southwest and to the Port of Long Beach to be transported by ship to consumers in the Far East. The proposed mine would operate for more than a half century. Haul trucks would operate 24 hours a day, 365 days a year, with loaded trucks dispatched from the mine at 8 to 10 minute intervals.

The company has applied for a number of permits, rights-of-way, and other authorizations required by federal and state law. The draft EIS on the proposal is expected to be published for public comment in the next few months. Following publication of the draft and a public comment period, a final EIS must be prepared before a final decision on the proposal can be made. The company must receive a favorable decision before any mining can begin.

Establishment of the national monument introduces an important new consideration into the decisionmaking process regarding the proposed mine. Significant questions remaining include (a) whether the proposed project is inconsistent with the purposes of the monument; and (b) whether and to what extent the company has valid existing rights that would have to be addressed. On this second point, the federal coal leases held by Andalex do not convey absolute rights to develop coal. Among other things, the leases are subject to other applicable legal requirements, and do not convey rights of way across federal land located off the leasehold. These rights of way remain subject to an independent federal permit requirement.

One of the other major holders of federal coal leases in the area, Pacificorp, has indicated its interest in relinquishing its leases. My staff has been actively discussing with the company ways to

accomplish this, including an exchange for bidding rights on other federal mineral leases. Andalex has in the past rebuffed Departmental inquiries regarding possible relinquishment of their leases, but I would seek to explore this possibility again if you establish this monument. In order to allow time to assess the company's willingness to pursue alternatives to the proposed project, I would, unless you direct otherwise, suspend the EIS preparation process upon creation of the monument to allow Andalex to assess the situation. Should Andalex not wish to move toward relinquishing the Kaiparowits leases, I would restart the EIS process and move it to completion and an ultimate decision on whether the proposed mine, including associated rights-of-way, can go forward consistent with existing law, including the monument proclamation.

CONCLUSION

Establishing the Grand Staircase-Escalante National Monument would be an exemplary exercise of Presidential authority under the Antiquities Act, well in keeping with past practice through which many notable objects of historic and scientific interest have been preserved, to the Nation's great and lasting benefit. I strongly recommend you sign the proclamation.



The Secretary of the Interior

LIST OF EXHIBITS

- A The Draft Proclamation
- B List of Historic and Scientific Objects in the Area
- C Bibliography of Principal Sources of Information
- D Complete List of National Monuments
- E National Monuments by President
- F National Monuments on the Colorado Plateau

Exhibit -- A

Proclamation _____

Date _____

Establishment of the Grand Staircase-Escalante National Monument

By the President of the United States of America

A Proclamation

The Grand Staircase-Escalante National Monument

The Grand Staircase-Escalante National Monument's vast and austere landscape embraces a spectacular array of scientific and historic resources. This high, rugged, and remote region, where bold plateaus and multi-hued cliffs run for distances that defy human perspective, was the last place in the continental United States to be mapped. Even today, this unspoiled natural area remains a frontier, a quality that greatly enhances the monument's value for scientific study. The monument has a long and dignified human history: it is a place where one can see how nature shapes human endeavors in the American West, where distance and aridity have been pitted against our dreams and courage. The monument presents exemplary opportunities for geologists, paleontologists, archeologists, historians, and biologists.

The monument is a geologic treasure of clearly exposed stratigraphy and structures. The sedimentary rock layers are relatively undeformed and unobscured by vegetation, offering a clear view to understanding the processes of the earth's formation. A wide variety of formations, some in brilliant colors, have been exposed by millennia of erosion. The monument contains significant portions of a vast geologic stairway, named the Grand Staircase by pioneering geologist Clarence Dutton, which rises 5500 feet to the rim of Bryce Canyon in an unbroken sequence of great cliffs and plateaus. The monument includes the rugged canyon country of the upper Paria Canyon system, major components of the White and Vermilion Cliffs and associated benches, and the Kaiparowits Plateau. That Plateau encompasses about 1600 square miles of sedimentary rock and consists of successive south-to-north ascending plateaus or benches, deeply cut by steep-walled canyons. Naturally burning coal seams have scorched the tops of the Burning Hills brick-red. Another prominent geological feature of the plateau is the East Kaibab Monocline, known as the Cockscomb. The monument also includes the spectacular Circle Cliffs and part of the Waterpocket Fold, the inclusion of which completes the protection of this geologic feature begun with the establishment of Capitol Reef National Monument in 1938 (Proclamation No. 2246, 50 Stat. 1856). The monument holds many arches and natural bridges, including the 130-foot-high Escalante Natural Bridge, with a 100 foot span, and Grosvenor Arch, a rare "double arch." The upper Escalante Canyons, in the northeastern reaches of the monument, are distinctive: in addition to several major arches and natural bridges, vivid geological features are laid bare in narrow, serpentine canyons, where erosion has exposed sandstone and shale deposits in shades of red, maroon, chocolate, tan, gray, and white.

Such diverse objects make the monument outstanding for purposes of geologic study.

The monument includes world class paleontological sites. The Circle Cliffs reveal remarkable specimens of petrified wood, such as large unbroken logs exceeding 30 feet in length. The thickness, continuity and broad temporal distribution of the Kaiparowits Plateau's stratigraphy provide significant opportunities to study the paleontology of the late Cretaceous Era. Extremely significant fossils, including marine and brackish water mollusks, turtles, crocodilians, lizards, dinosaurs, fishes, and mammals, have been recovered from the Dakota, Tropic Shale and Wahweap Formations, and the Tibbet Canyon, Smoky Hollow and John Henry members of the Straight Cliffs Formation. Within the monument, these formations have produced the only evidence in our hemisphere of terrestrial vertebrate fauna, including mammals, of the Cenomanian-Santonian ages. This sequence of rocks, including the overlaying Wahweap and Kaiparowits formations, contains one of the best and most continuous records of Late Cretaceous terrestrial life in the world.

Archeological inventories carried out to date show extensive use of places within the monument by ancient Native American cultures. The area was a contact point for the Anasazi and Fremont cultures, and the evidence of this mingling provides a significant opportunity for archeological study. The cultural resources discovered so far in the monument are outstanding in their variety of cultural affiliation, type and distribution. Hundreds of recorded sites include rock art panels, occupation sites, campsites and granaries. Many more undocumented sites that exist within the monument are of significant scientific and historic value worthy of preservation for future study.

The monument is rich in human history. In addition to occupations by the Anasazi and Fremont cultures, the area has been used by modern tribal groups, including the Southern Paiute and Navajo. John Wesley Powell's expedition did initial mapping and scientific field work in the area in 1872. Early Mormon pioneers left many historic objects, including trails, inscriptions, ghost towns such as the Old Paria townsite, rock houses, and cowboy line camps, and built and traversed the renowned Hole-in-the-Rock Trail as part of their epic colonization efforts. Sixty miles of the Trail lie within the monument, as does Dance Hall Rock, used by intrepid Mormon pioneers and now a National Historic Site.

Spanning five life zones from low-lying desert to coniferous forest, with scarce and scattered water sources, the monument is an outstanding biological resource. Remoteness, limited travel corridors and low visitation have all helped to preserve intact the monument's important ecological values. The blending of warm and cold desert floras, along with the high number of endemic species, place this area in the heart of perhaps the richest floristic

region in the Intermountain West. It contains an abundance of unique, isolated communities such as hanging gardens, tinajas, and rock crevice, canyon bottom, and dunal pocket communities, which have provided refugia for many ancient plant species for millennia. Geologic uplift with minimal deformation and subsequent downcutting by streams have exposed large expanses of a variety of geologic strata, each with unique physical and chemical characteristics. These strata are the parent material for a spectacular array of unusual and diverse soils that support many different vegetative communities and numerous types of endemic plants and their pollinators. This presents an extraordinary opportunity to study plant speciation and community dynamics independent of climatic variables. The monument contains an extraordinary number of areas of relict vegetation, many of which have existed since the Pleistocene, where natural processes continue unaltered by man. These include relict grasslands, of which No Mans Mesa is an outstanding example, and pinon-juniper communities containing trees up to 1400 years old. As witnesses to the past, these relict areas establish a baseline against which to measure changes in community dynamics and biogeochemical cycles in areas impacted by human activity. Most of the ecological communities contained in the monument have low resistance to, and slow recovery from, disturbance. Fragile cryptobiotic crusts, themselves of significant biological interest, play a critical role throughout the monument, stabilizing the highly erodible desert soils and providing nutrients to plants. An abundance of packrat middens provides insight into the vegetation and climate of the past 25,000 years and furnishes context for studies of evolution and climate change. The wildlife of the monument is characterized by a diversity of species. The monument varies greatly in elevation and topography and is in a climatic zone where northern and southern habitat species intermingle. Mountain lion, bear and desert bighorn sheep roam the monument. Over 200 species of birds, including bald eagles and peregrine falcons, are found within the area. Wildlife, including neotropical birds, concentrate around the Paria and Escalante Rivers and other riparian corridors within the monument.

Section 2 of the Act of June 8, 1906 (34 Stat. 225, 16 U.S.C. § 431) authorizes the President, in his discretion, to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States to be national monuments, and to reserve as a part thereof parcels of land, the limits of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected.

NOW, THEREFORE, I, WILLIAM J. CLINTON, President of the United States of America, by the authority vested in me by Section 2 of the Act of June 8, 1906 (34 Stat. 225, 16 U.S.C. § 431), do proclaim that there are hereby set apart and reserved as the Grand

Staircase-Escalante National Monument, for the purpose of protecting the objects identified above, all lands and interests in lands owned or controlled by the United States within the boundaries of the area described on the document entitled "Grand Staircase-Escalante National Monument" attached to and forming a part of this proclamation. The federal land and interests in land reserved consist of approximately 1.7 million acres, which is the smallest area compatible with the proper care and management of the objects to be protected.

All federal lands and interests in lands within the boundaries of this monument are hereby appropriated and withdrawn from entry, location, selection, sale, leasing, or other disposition under the public land laws, other than by exchange that furthers the protective purposes of the monument. Lands and interests in lands not owned by the United States shall be reserved as a part of the monument upon acquisition of title thereto by the United States.

The establishment of this monument is subject to valid existing rights.

Nothing in this proclamation shall be deemed to revoke any existing withdrawal, reservation or appropriation; however, the national monument shall be the dominant reservation.

The Secretary of the Interior shall manage the monument through the Bureau of Land Management, pursuant to applicable legal authorities, to implement the purposes of the monument. The Secretary of the Interior shall prepare, within three years of this date, a management plan for this monument, and shall promulgate such regulations for its management as he deems appropriate. This proclamation does not reserve water as a matter of federal law. I direct the Secretary to address in the management plan the extent to which water is necessary for the proper care and management of the objects of this monument and the extent to which further action may be necessary pursuant to federal or state law to assure the availability of water.

Warning is hereby given to all unauthorized persons not to appropriate, injure, destroy or remove any feature of this monument and not to locate or settle upon any of the lands thereof.

IN WITNESS WHEREOF, I have hereunto set my hand this ____ day of August, in the year of our Lord nineteen and ninety-six, and of the Independence of the United States of America the two hundred and twenty-first.

William J. Clinton

Q. Why is the President doing this?

A. As the proclamation vividly describes, these are federal lands with unique values. The area is the most remote in the Lower 48. It is almost untouched and virtually undeveloped. As the proclamation makes clear, the monument covers objects and areas of tremendous scientific and historic value, including archaeological sites, rare biological communities, hundreds of millions of years of geologic history and uniquely valuable fossil records.

These are special public resources that deserve protection. The monument designation will help ensure that future decisions about the area are shaped in a way that recognizes and protects its special qualities.

It is important to remember that many of the Nation's most loved natural areas were first protected by Presidential action under the Antiquities Act, including the nearby national parks at Grand Canyon, Zion, Arches, Bryce Canyon, and Capitol Reef.

Q. Why do this now?

A. A compelling reason is the President's concern that the proposed Andalex coal mine could irreversibly damage this unique area. The President also believes it is important to draw attention to and protect the unparalleled and fragile resources that exist not only in the area of the proposed mine, but also in the surrounding area.

Andalex Resources, a privately-held, foreign-owned coal company, is aggressively seeking approval to open a coal mine on the Kaiparowits Plateau in the heart of these wild lands. The proposal is to truck the coal out of the area on newly constructed or improved roads and ship most of it overseas to the Far East.

As the President said up in Yellowstone, there are the right places to mine and the wrong places. Coal companies and speculators have tried before to develop the Kaiparowits and nearby coal fields -- and they've always backed away because the opposition has been widespread and the economics marginal. The President hopes that Andalex will agree to work with the Department of the Interior to trade its remaining interests for coal elsewhere in Utah.

Another company with federal coal leases in the area is in discussions with the Department of the Interior to swap its holdings for coal elsewhere in Utah. We hope Andalex will also

take that route.

If Andalex won't agree to a trade, the President wants to ensure that any mine that might eventually go forward, including all associated features such as roads and power lines, are subjected to the highest possible standards of environmental review. The new monument designation helps provide that assurance.

Q. Can the coal mine go ahead even with the new monument?

A. That cannot yet be conclusively determined. If Andalex does not work with us to relinquish its leases within the monument in exchange for other federal property, the Secretary of the Interior will restart the EIS process, which will address the environmental impacts of the mine, including its effects on the objects of historic and scientific interest that led to creation of the monument. Environmental impacts, including impacts on the monument, are relevant to the Secretary's decision whether to approve the mine proposal.

Q. Doesn't this action inherently bias the environmental review against the mine?

A. No. It emphasizes that the decision on the mine proposal must protect these objects of historic and scientific interest.

Q. Is this just a campaign event?

A. No. The Andalex mine issue and the extraordinary environmental and scientific value of the surrounding lands were brought to the President's attention during recent congressional debates on the future of federal land management in Utah. You'll recall that the President threatened to veto bills that would have eliminated or reduced protection for some of the lands protected by this monument and millions of other acres of Federal land in Utah.

The President was surprised to learn that public lands with these values were not better protected, and he was particularly concerned that coal mining in the area would despoil one of the most remote, beautiful, and ecologically intact areas in the lower 48. He instructed White House and agency staff to advise him on measures he could take to protect the area and asked Secretary Babbitt for a specific recommendation regarding the Antiquities Act. This monument is the result.

Q. Isn't this going to reignite the "War on the West" rhetoric?

A. It shouldn't. There will be no effect on private property rights. The monument designation doesn't apply to anything but

federal land -- land that belongs to the American people.

Grazing, hunting, fishing, and backcountry camping and travel will continue. Grazing permits remain in effect. Over the next three years, the Department of the Interior will develop, with full public involvement, a long-term management plan for the monument.

In terms of its impacts on the mining industry, the President wants to trade the leases here for federal coal in other, less environmentally sensitive areas. So it's not a question of jobs or no jobs. It's really a question of finding the right location in Utah for mining.

Q. Won't this hurt the economy of the area?

A. To the contrary. Millions of people from around the world visit the parks and public lands of the Colorado Plateau each year specifically because the land is beautiful and unspoiled. Six park units within 55 miles of this monument receive a total of more than 11 million visitor days per year. We are confident that, like Zion, Bryce Canyon, the Grand Canyon, and other natural wonders in this region originally protected by Presidential action under the Antiquities Act, the Grand Staircase-Escalante National Monument will help protect the underpinnings of the region's economy and provide one more reason for visitors and businesses to come to the area.

Q. On what basis were the boundaries of the monument drawn?

A. The monument boundaries encompass the area required to properly care for the remarkable objects within the monument. Interior Department staff reviewed the available information, identified numerous objects deserving protection, and outlined a monument of sufficient size to protect those objects. Some of the geological, archeological, paleontological, historical and biological features are present throughout the entire monument area, others are scattered within it, several lie along the borders of the area, and many overlap. Under these circumstances, fragmenting the monument would endanger many of these features.

Presidents have proclaimed other monuments of similar size, including the Grand Canyon (800,000 acres when originally established by Theodore Roosevelt); Glacier Bay (1.4 million acres when originally established by President Coolidge); Death Valley (850,000 acres when established by President Hoover); and Wrangell-St. Elias (nearly 11 million acres when established by President Carter).

Q. What's going to happen to the state and private parcels in

the monument?

Approximately 180,000 acres of state land and 15,000 acres of private land are within the boundaries of the monument. The monument designation does not apply to these lands because the Antiquities Act applies only to federal lands. Very few people live within the boundaries of the monument, and the towns in the area -- Escalante, Boulder, Kanab, and Tropic -- are outside the boundaries of the monument. As in other areas where states have inholdings in protected areas of federal lands, we are prepared to exchange these inholdings for other federal land outside the monument boundaries.

Q. How long does the monument designation remain in effect?

A. It is permanent, unless altered by legislation. Historically, almost all of the more than one hundred national monuments created by Presidential proclamation since 1906 have either been left undisturbed or reaffirmed by Congress. Congress has, for example, enacted legislation redesignating as national parks a number of national monuments, including some in the area of this monument; e.g., Zion, Capitol Reef, Bryce Canyon, Grand Canyon, Arches.

Q. Is this monument the same thing as a wilderness area?

A. No. The Wilderness Act of 1964 seeks to preserve roadless areas that offer outstanding opportunities for solitude and primitive and unconfined recreation. The Antiquities Act of 1906, on the other hand, serves to protect "objects of historic or scientific interest." Management of resources in a national monument may resemble wilderness management if necessary to protect the historic and scientific features to be protected, but activities such as motorized vehicular travel that would be prohibited in wilderness areas may be permitted in a national monument. As noted above, the measures necessary to protect the objects within this monument will be addressed in the process of preparing a management plan.

Nothing about the action taken today prohibits the Executive from recommending, and Congress from designating, areas within the monument as wilderness. Congress has, in fact, many times in the past designated wilderness within national monuments, including the following monuments: Badlands, Bandelier, Black Canyon of the Gunnison, Chiricahua, Craters of the Moon, Joshua Tree, Lava Beds, Misty Fjords, Organ Pipe Cactus, Pinnacles, and Saguaro.

Q. What is the relationship between the new national monument and the Utah wilderness inventory review recently announced by Secretary Babbitt?

A. None, they are separate actions.

After nearly 20 years of controversy over the Bureau of Land Management's inventory to determine which of the lands it manages in Utah have wilderness character, Secretary Babbitt last month directed the BLM to conduct a statewide review of 2.5 million acres that many wilderness advocates in and out of Congress have alleged were wrongfully excluded from the earlier inventory. Secretary Babbitt has promised to consult widely before taking further action once the review is completed in January 1997.

As noted above, Congress can create wilderness areas within national monuments. The Grand Staircase-Escalante National Monument contains about 900,000 acres of existing BLM wilderness study areas (WSAs) and several hundred thousand acres that many believe ought to be classified as WSAs. The review directed by the Secretary will examine these latter areas, as well as other areas outside the monument. The decision to put any area into the National Wilderness Preservation System requires, under the Wilderness Act, an Act of Congress.

Q. Why didn't the President reserve water rights for the monument?

A. Some of the objects in the area (e.g., paleontologic and archeologic) do not require water. As noted above, BLM will develop, over the next three years and with full public involvement, a long-term management plan for the monument. This plan will address the extent to which water is necessary for the proper care and management of the objects of the monument. The plan will also address whether and how to assure the availability of any needed water under state or federal law.

DRAFT

Presidential Statement

Today I take lasting pride in proclaiming the Grand Staircase-Escalante National Monument in the expansive high-plateau country of southern Utah. I do this under one of our greatest conservation laws, the Antiquities Act of 1906. Theodore Roosevelt used this Act to proclaim 18 different monuments, including the Grand Canyon. Nearly every President since has used it to protect our nation's cultural and natural legacy. Today we pay the finest possible tribute to TR's crusading spirit.

The Grand Staircase-Escalante, 1.7 million acres of public lands, is a place where we can see the hand of God at work, etching the canyons, tracing the streams, lifting high the plateaus, using every brilliant color on His palette. Ancient human cultures, our long-ago ancestors, walked this ground and left behind their structures and rock art. Deep below, invisible to us, lie the bones of dinosaurs and other creatures from the Cretaceous.

This is also a monument to America's own history. In the Grand Staircase-Escalante, a frontier then and now, we can gain some understanding of the travails that courageous Mormon pioneers faced in their sacred quest to settle a dry and difficult land.

Some have proposed to mine coal in this area, but I am confident that we can resolve this situation, as we recently did at Yellowstone, through a determined effort to take the long view in a spirit of cooperation, working hard to reach the common ground. There are times and places where we will be a far better people and Nation where we find the will, in a hurried world, to stay our hand.

For this is a day to look far ahead, to make our minds learn the highest lessons of the endless vistas of cliffs and plateaus. Wallace Stegner, one of America's greatest writers and the American West's most eloquent voice, wrote of the canyon country that it "fills the eye and overflows the soul." And this land does implore us to heed our souls and hearts, to see far, to imagine all the long lines of generations of people stretching beyond the horizon. We do this for them, for those still to come.

Therefore, as a gift to our children and grandchildren and to many other generations, I now proclaim, on behalf of this generation of Americans, the Grand Staircase-Escalante National Monument.

Exhibit -- B

Grand Staircase - Escalante National Monument
List of Historic and Scientific Objects of Interest

Description: Perennial streams enter entrenched canyons in white Navajo and deep-red Windgate Sandstone. Deer Creek, Steep Creek, and The Gulch have perennial flows of clear cold water. The Gulch leads up into the spectacular Circle Cliffs where remarkable specimens of petrified wood (60 ft. logs) exist in the Morrison and Chinle formations.

Location: Escalante - Steep Creek WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: White Canyon cuts through the Kaibab Limestone to the Coconino Sandstone, the oldest stratum in the Upper Escalante drainage.

Location: Escalante - Studhorse Peaks unit

Source: Davidson, E.S., Geology of the Circle Cliffs Area, Garfield and Kane Counties, Utah, 1967, p. 10

Description: Big Spencer Flat Road and the V Road is site of "thunderball" iron concretions known as Moqui marbles. These oddities weather out of the Navaho sandstone and are a popular recreation feature.

Location: North Escalante Canyons WSA

Source: Sargent, K.A., Environmental Geologic Studies of the Kaiparowits Coal-Basin, Utah, p. 16, and Utah BLM Statewide Final Wilderness EIS, 1990

Description: The Waterpocket Fold tops out at Deer Point (7,243 feet). Most of the Waterpocket Fold is in the Capitol Reef National Park where it is a major landmark.

Location: Escalante - Colt Mesa unit

Source: Utah Wilderness Coalition, Wilderness at the Edge, p. 189, and Davidson, E.S., Geology of the Circle Cliffs Area, Garfield and Kane Counties, Utah, 1967, p. 61

Description: The inner gorges of the upper Moody Canyons cut into the relatively harder Kaibab Limestone and Coconino Sandstone (oldest exposed layer in this region).

Location: Escalante - Colt Mesa unit

Source: Utah Wilderness Coalition, Wilderness at the Edge, p. 189

Description: Dry Valley Creek Canyon. A waterfall blocks the entrance to Dry Valley Creek Canyon and consequently, the canyon remains in its natural condition. A perennial stream cuts through alluvial benches. It is a relict and probably possesses important scientific values.

Objects of Geologic Interest, August 1996 (Continued)

.....
Location: Mud Springs Canyon WSA
.....

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: The East Kaibab Monocline or the Cockscomb is unique as a Colorado Plateau structure. Its alignment with the Paunsaugant, Seevier, and Hurricane faults suggest that it too could be a fault at depth. It extends from the Colorado River north to Canaan Peak and is a major landmark.

.....
Location: Kaiparowits Plateau - The Cockscomb WSA
.....

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: The Blues - a Cretaceous shale badlands, richly colored and contrasting with adjacent pink sandstone cliffs that forms a significant part of the vista for visitors to Bryce Canyon National Park. The Kaiparowits formation is well exposed here represents an accumulation of exceedingly rapid proportions and an immature sedimentary region which is not well displayed in any other formation in the Colorado Plateau.

.....
Location: The Blues WSA (near Bryce Canyon)
.....

Source: Welch, S.L., Rigby, J.K., Hamblin, W.K., A Survey of Natural Landmark Areas of the North Portion of the Colorado Plateau, 1980 p. 248

Description: Fifty mile Mountain is a complex of deep canyons, upwarps, monoclines, hogbacks and a spectacular 42-mile long Straight Cliffs wall, topping a thousand-foot-high cliffline of the Summerville, Morrison and Dakota formations. This complex marks the edge of the Kaiparowits Plateau.

.....
Location: Kaiparowits Plateau - Fifty mile Mountain WSA
.....

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Ancient coal fires of Right Hand Collet Canyon have left surface remains in the form of clinkers and deep red ash. These remains dominate the visual character of the drainage.

.....
Location: Carcass Canyon WSA
.....

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Arch. Span of 40 feet located in Calf Canyon, and is visible from the Alvey Wash road.

.....
Location: Carcass Canyon WSA
.....

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Objects of Geologic Interest, August 1996 (Continued)

Description: Burning Hills - naturally occurring underground coal fires have turned steep and rugged exposed hilltops a distinctive red.

Location: Burning Hills WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Devils Garden - oddly shaped arches (including Metate Arch) and rock formations in the hills at the foot of the cliffs marking the Kaiparowits Plateau.

Location: Carcass Canyon WSA (east of WSA)

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: This area possesses exceptional scenic values and contains a portion of the Cockscomb, a prominent southern Utah geologic feature. the Cockscomb forms 2 parallel knife-edged ridges with a bisection V-shaped trough. Flatirons, small monoliths, and other colorful formations are present on the west ridge. These major features of south central Utah cover over 4,000 acres.

Location: Mud Spring WSA.

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: An interesting fold in Henrieville Creek along the northwest boundary of the WSA is of geologic interest and a sightseeing attraction

Location: Mud Spring WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Window Wind Arch above the middle trail has scenic value because of its location on the very edge of the Straight Cliffs. The Straight Cliffs escarpment is major landmark in south-central Utah and an important scenic feature within view from the Hole-in-the-Rock road. Woolsey Arch is located in Rock Creek Basin, an area of colorful Navaho sandstone and high cliffs.

Location: Fifty Mile Mountain WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Unique because it consists of 2 prominent southern Utah physiographic systems. It includes the eastern most extension of the White Cliffs component of the famous ascending staircase, cliff and terrace physiography, the Vermillion, White, and Pink Cliffs; and east of the Paria river, the dividing point is the landscape representative of the Glen Canyon physiography of sculptured, dissected, and exposed Navaho

Objects of Geologic Interest, August 1996 (Continued)

sandstone. The area where these merge between Deer Range and Rock Springs Bench is a highly scenic complex and colorful landscape.

Location: Paria-Hackberry WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: The Vermillion Cliffs with its associated Wingate Sandstone cliffs, colorful Chinle badlands, and canyons with their multiple colors and the intensity of coloration contribute to high scenic quality. Included in this landscape are Hackberry Canyon, Paria River Valley, Hoge Canyon, the Pilot Ridge-Starlight Canyon-Kirbys Point area and Eight Mile Pass.

Location: Paria-Hackberry WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: An area of high scenic value include the breaks of the Rush Beds and the west wall of Cottonwood Canyon, upper tributaries to Hackberry Canyon, Death Valley Draw, and the exceptional Navajo Sandstone domes and fin formations on either side of lower Hackberry Canyon.

Location: Paria-Hackberry WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Four ONA's designated to preserve "unique scenic values and natural wonders". North Escalante Canyon (5,800 acres), The Gulch (3,430), Escalante Canyons (480 acres), Phipps-Death Hollow (12 more outside WSA)

Location: North Escalante Canyons WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Location: North Escalante Canyons/The Gulch ISA

Description: This area is geologically complex and has some of the most outstanding canyon scenery in the country. Harris Wash a canyon of the classic Escalante River drainage canyon form with many entrenched meanders in the Navajo Sandstone.

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: A unique feature of the Burning Hills is the red coloration in the landscape is the result of geological changes attributed to the naturally occurring coal fires. The coloration creates a highly scenic area.

Location: Burning Hills WSA

Objects of Geologic Interest, August 1996 (Continued)

 Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: The White Cliffs are high white or yellow cliffs of Navajo Sandstone. Vary in height from 600' at Deer Springs Point bench to 1,200' at Deer Springs Point and the Sheep Creek Bull Valley Gorge-Paria River confluence. The cliffs consistently reach a 1000' in height and the cliffline is interrupted by 8 canyons.

 Location: Paria-Hackberry WSA

 Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: This area contains twenty-four undeveloped springs. Ten are located in upper Paria, 6 in hackberry, 5 on the eastern border of Cottonwood Creek, and 3 on west boundary. There are also 6 developed springs. These are significant features in this arid environment.

 Location: Paria-Hackberry WSA

 Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Phipps-Death Hollow ONA (12/23/70) contains 34,288 acres managed to preserve scenic values and natural wonders.

 Location: Phipps-Death Hollow ISA

 Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Arches. Peek-a-boo Rock, Wahweap Window, Jacob Hamblin Arch, Starlight Arch, Cobra Arch, Sam Pollack Arch, Woolsey Arch, and several more unnamed arches and natural bridges.

 Location: Kaiparowits Plateau and adjacent areas

 Source: Sargent, K.A., Environmental Geologic Studies of the Kaiparowits Coal-Basin, Utah.

Description: Sand-calcite crystals from the Morrison Formation. These crystals are the first reported occurrence from rocks of Jurassic age and only reported sand crystals in southern Utah.

 Location: Kaiparowits Plateau

 Source: Sargent, K.A., Environmental Geologic Studies of the Kaiparowits Coal-Basin, Utah. p. 18

Description: Circle Cliffs in the northeast portion of WSA features intensively colored red, orange, and purple Chinle mounds and ledges at the base of Wingate Sandstone cliffs. Vertically jointed cliffs banded with red, yellow, and white colors and bench tops and upper cliff faces possess innumerable orange-red Kayenta Sandstone

Objects of Geologic Interest, August 1996 (Continued)

knobs. One of most spectacular and distinctive landscapes on the Colorado Plateau.

Location: Steep Creek WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Area includes Escalante Natural Bridge (130' high, 100' span) and 4 other natural bridges and arches.

Location: Phipps-Death Hollow WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: The Gulch is a major geologic feature. Deeply entrenched very sheer red straight line Wingate Sandstone walls. High ridges and slickrock penks. Ridges drop fairly abruptly to canyons below.

Location: Steep Creek WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Lamanite Natural Bridge. Actually a large arch with good symmetry and form. Located in an impressive setting in a deep side canyon to The Gulch.

Location: Steep Creek WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Petrified wood. Upper Gulch-Circle Cliffs contains large, unbroken logs of petrified wood (NEA, 2,213 acres). Maximum log length 36'. The scenic values of these logs is enhanced by their colorful surroundings.

Location: Steep Creek WSA

Source: Utah Statewide Wilderness EIS, 1990 W FEIS 3B 19, and Sargent, K.A., Environmental Geologic Studies of the Kaiparowits Coal-Basin, Utah, p.13.

Description: Outstanding scenic values include the upper portion of Paradise Canyon where sandstone in the Wahweap Formation outcrops as colorful walls and cliffs. Ponderosa pine growing in the sandstone enhance the scenic values. Two sandstone monoliths or fins above Alvey Wash are prominent geological features.

Location: Death Ridge WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Objects of Geologic Interest, August 1996 (Continued)

Description: The area contains a unique canyon and bench system. The entire ISA contains outstanding scenery. Examples include the area east of Horse Canyon. Four canyons have isolated 10 benches of varying size. Many bench tops have intricate pattern of innumerable orange-red Kayenta Sandstone knobs. Wolverine Canyon and Death Hollow have extremely narrow and convoluted sections. Another feature, Harris Wash a canyon of the classic Escalante River drainage canyon form with many entrenched meanders in the Navajo Sandstone.

Location: North Escalante Canyons/The Gulch ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Mollie's Nipple, an erosional remnant is a major landmark in the area.

Location: Kaiparowits Plateau.

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Natural Arches. Sam Pollock Arch, located at the head of a tributary drainage of Hackberry Canyon, and Starlight Arch located west of No Man's Mesa.

Location: Paria-Hackberry WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Area of diverse geology represented by spectacular deep canyons. The Escalante River canyon is 1100 feet deep. The canyon walls are rough and broken and the canyon is narrow and it meanders. Pure white to golden sandstone has been eroded into expanses of slickrock. Death Hollow Canyon is 1,000' feet deep and meandering. The extensive upper basin through which Mamie Creek flows is a extremely dissected area of canyons, tanks, other formations. Red layers of Carmel Formation cap high mesas and ledges of the exposed Kayenta Formation.

Location: Phipps-Death Hollow ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Petrified wood deposits just west of the Old Paria Townsite and in Hackberry Canyon. Both are in the Chinle formation.

Location: Paria-Hackberry WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: All the topographic features of the Kaiparowits region have been developed in sedimentary rocks. The Kaiparowits Plateau is a slightly tilted sedimentary mass that extends as a narrow mesa from the High

Objects of Geologic Interest, August 1996 (Continued)

Plateaus to Glen Canyon 70 miles distant. Its culminating point, Canaan Peak is an outlier of the Table Cliff Plateau; the Paria Plateau is a huge block of sandstone, the Waterpocket monicline is a ridge of folded rock intricately dissected and flanked by hogbacks, and the broken "comb" in the vicinity of Paria is the edge of sandstone beds upturned in the East Kaibab fold. The Circle Cliffs are inward-facing walls of sandstone that rim an oval depression. These prominent features are but large-scale examples of the mesas, buttes, and ridges that characterize the landscape of southern Utah.

Location: Kaiparowits Plateau region

Source: Gregory, H.E. and Moore, R. C. The Kaiparowits Region: A Geographic and Geologic Reconnaissance of Part of Utah and Arizona. 1931.

Description: Paria River from Colorado River to its source, identified by NPS as possessing values that may be of national significance, potential to be included in the National Wild and Scenic River System.

Location: Paria-hackberry WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Escalante River from Lake Powell to its source, a section of 14.9 miles, was designated as for study as a candidate Wild and Scenic River by the Secretary of the Interior on 10/11/70.

Location: Phipps-Death Hollow ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Lower Calf Creek Falls. Calf Creek Canyon is characterized by red alcoved walls, 2 waterfalls, and extensive expanses of white slickrock. Lower Calf Creek Falls drops 126' and Upper Calf Creek's drop is 86'. High educational values associated with interpretation of these areas.

Location: Phipps-Death Hollow ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: The area contains 40 miles of perennial streams, a significant feature in this arid environment.

Location: Phipps-Death Hollow ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Objects of Paleontologic Interest, August 1996

Description: Fossil assemblage photographs. Typical mollusks from Tropic Shale, south of Escalante include straight cone edaphopods, ammonites, gastropods, and pelecypods and Cretaceous sharks teeth from the Straight Cliffs Formation

 Location: Kaiparowits Plateau

 Source: Sargent, K.A., Environmental Geologic Studies of the Kaiparowits Coal-Basin, Utah, pp 14-15

Description: Gray Cliffs/Pink Cliffs - This sequence of rocks may contain one of the best and most continuous records of Late Cretaceous terrestrial life in the world. Formation has yielded early mammals, lizards, dinosaurs, crocodillians, turtles, mollusks.

 Location: Kaiparowits - The Blues WSA

 Source: BLM, Escalante/Kanab RMP - Grand Staircase Ecosystem Analysis, 1994

Description: Fossils deemed by the Museum of Northern Arizona in a 1976 study to be of major importance. They are found in the Cretaceous Wahweap Formation outcrops include abundant fragments of turtle shells and dinosaurs, as well as several crocodile teeth. There is an excellent chance that mammal fossils will be found

 Location: Kaiparowits Plateau - Nipple Bench unit

 Source: BLM, Kaiparowits power project environmental impact statement, 1976

Description: The Straight Cliffs Formation is limited to the southern Utah area. It contains primitive mammals including one of the potentially oldest marsupial fossils identified.

 Location: Kaiparowits Plateau

 Source: BLM, Warm Springs Project Preliminary Draft EIS, 1996

Description: Invertebrate and vertebrate specimens found Straight Cliffs, Tropic Shale, and Dakota Formations. 13 collection sites recorded (gastropods, cephalopods in upper Cretaceous Formations, vertebrate in Dakota and Tropic Shales). Likely to occur along entire length of the Straight Cliffs

 Location: Carcass Canyon WSA

 Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: The Kaiparowits is of interest in understanding the evolution of mammals and other terrestrial vertebrates. Very little is known of Cretaceous mammals prior to the latest part of that period. The mid-

Objects of Paleontologic Interest, August 1996 (Continued)

Cretaceous mammalian twilight zone is spanned by the fossiliferous, terrestrial rock units of the Kaiparowits region. They contain unique evidence bearing on the early diversification of important mammalian groups of the Late Cretaceous. The thickness, continuity, and broad temporal distribution of the Kaiparowits sequence provides the opportunity to document changes in terrestrial vertebrate assemblages over a wide span of Late Cretaceous time.

Location: Kaiparowits Plateau

Source: Eaton, Jeffrey G. and Cifelli, Richard L. Preliminary report on Late Cretaceous mammals of the Kaiparowits Plateau, southern Utah, 1988

Description: Extremely significant fossils including marine and brackish water mollusks, turtles, crocodillians, lizards, dinosaurs, fishes, and mammals have been recovered from the Dakota formation, Tropic shale, Straight Cliffs Formation (Tibbet Canyon, Smoky Hollow, and John Henry members), and Wahweap formation in the area around the proposed Andalex mine and some localities lie directly along the proposed haul routes. This sequence of rocks (including the overlying Wahweap and Kaiparowits formations) contain perhaps the best and most continuous record of Late Cretaceous terrestrial life in the world

Location: Kaiparowits Plateau

Source: Eaton, Jeffrey G., Personal correspondence to Mr. Mike Noel, BLM, 1991

Objects of Prehistoric Interest August 1996

Description: Sixty sites have been recorded and the potential for additional sites is exceptionally high. Sites discovered to date include lithic scatters, 13 rockshelters (some w/storage cists and rock art), 1 pithouse village site and 1 structure (probably of Anasazi origin). Some of the rock art and rock shelter and 1 campsite are potentially eligible for nomination to the NRHP.

Location: North Escalante Canyons/The Gulch ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Friendship Cove Pictograph site nominated to NRHP. This site consists of a set of large Fremont style pictographs painted on the face of a large sandstone cliff.

Location: Phipps-Death Hollow ISA, eastern part

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Forty-four sites of diverse types have been recorded in the area. 14 rock art (petroglyph and pictographs sites (2 from Fremont culture), 1 Pit-house village site, lithic scatters of Paiute and Anasazi, and 6 rockshelters have been discovered. Potential for more sites is good.

Location: Phipps-Death Hollow ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Situated at the intersection of three major prehistoric cultures the Plateau has long been a magnet for archeological study. It has been recognized that the Kaiparowits Plateau might contain important clues that would aid in answering questions in the archeology of the Southwest.

Location: Kaiparowits Plateau

Source: Utah Wilderness Coalition, Wilderness at the Edge, p. 147 and Lister, Florence C., Kaiparowits Plateau and Glen Canyon prehistory, an interpretation based on ceramics, 1964

Description: Fifty-mile Mountain Archeological District contains more than 400 sites including Anasazi habitations and granaries. Important scientific value. Some of the most significant cultural resources in the Four Corners area. Archaeological District (47,325 acre) has been nominated to NRHP. Majority of sites are masonry structures (of 1-10 rooms). Most are of Virgin Anasazi origin but include sites attributed to Fremont, Hopi, and Paiute. Navaho are also expected of occupying the area. 4,000 total sites may be located in WSA.

Location: Fifty-mile Mountain WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Sixty-five sites have been recorded. They include lithic and ceramic scatters, masonry structures

Objects of Prehistoric Interest, August 1996 (Continued)

(granaries and storage cists), one rock shelter. Masonry and some lithic/ceramic associated with Virgin Anasazi/Virgin-Kayenta Anasazi. Two are Pueblo II-III time period. Some sites are associated with Paiute-age or Archaic-age peoples. At least 8 sites in this area are eligible for nomination to the NRHP.

Location: Wahweap WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: High concentration of prehistoric sites. Although surveys are incomplete for the Warm Creek unit more than 600 sites have been found ranging from lithic scatters and campsites to rockshelters.

Location: Kaiparowits Plateau/Warm Creek unit

Source: BLM, Kaiparowits power project environmental impact statement, 1976

Description: Part of a larger area extensively used by the Kayenta Anasazi and later the Southern Paiute Indians. Site densities expected to be moderate to high.

Location: Kaiparowits Plateau/Squaw Canyon unit

Source: ERT, 1980, Kaiparowits coal development and transportation study, final report

Description: Prehistoric site densities are high on top of Nipple Bench. Sites represent Fremont, Virgin Anasazi and Kayenta Anasazi. The sites represent complex associations of features and artifacts and indicate permanent or extensive camps in rock shelters.

Location: Kaiparowits Plateau/Nipple Bench unit

Source: Fish, Paul, Preliminary Report Kaiparowits Power Project

Description: Six sites have been recorded. One is Pueblo II Anasazi occupation site, with others unidentified.

Location: Burning Hills WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: One hundred-five sites (primarily lithic scatters) have been recorded covering a broad period of occupation. Ten rockshelters w/storage cists or storage caches, 1 w/masonry room, 3 w/granaries associated with Anasazi or Fremont have been discovered. Additional sites include petroglyph and pictograph panels associated with shelter sites and 1 burial site.

Location: Carcass Canyon WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Objects of Prehistoric Interest, August 1996 (Continued)

Description: One hundred thirty-four documented sites represent virtually all known prehistoric cultures in southern UT (Archaic, Fremont, Anasazi, Southern Paiute). 8,000 years of prehistory are represented. The sites primarily represent temporary habitation by hunter gatherers.

Location: Death Ridge WSA

Source: BLM Utah Statewide Wilderness EIS, 1990, and Hauck, F.R., Cultural Resource Evaluation of South-Central Utah, 1977-1978

Description: The area contains 41 recorded sites and based on surveys may contain exceptionally high densities of sites. Known sites include rockshelters, pit houses, lithic scatters, and masonry structures. Pictograph panels are in Deer Creek Canyon and petroglyphs are found in Snake Creek Canyon. A study located and estimated 612 sites per 23,000 acres, 564 potentially eligible for nomination to the NRHP (southern border of WSA). Another inventory estimated 360 sites per 23,000 acres at the northern border of the WSA.

Location: Paria-Hackberry WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: The Kayenta Pueblo culture inhabiting the Straight Cliff and portions of the Escalante River drainage between A.D. 1000 and 1200 were likely in contact with the Fremont culture. Although both inhabited the area at the same time and competed for limited agricultural lands there is no evidence of open conflict during this time. Some modifications of pottery making techniques between the two cultures indicates that there was trade and exchange between them. Little is known positively about the Kayenta culture, and additional research in this area could provide valuable insight on interactions between the two cultures.

Location: Straight Cliffs WSA

Source: Lister, Kaiparowits Plateau and Glen Canyon Prehistory: An interpretation based on ceramics, 1964.

Objects of Historic Interest, August 1996

Description: Dance Hall Rock/Hole-in-the-Rock Trail. While the Hole-in-the-Rock Trail was under construction in 1879, Mormon Pioneers camped at Fortymile Spring and held meetings and dances in the shelter of Dance Hall Rock. Designated historical site by DOI 1970.

Location: Two miles west of the Glen Canyon NRA on the Hole in the Rock Trail

Source: Utah Wilderness Coalition, Wilderness at the Edge, - p. 182

Description: Historic route constructed in 1879 to provide access from Escalante to areas on the opposite side of the San Juan River in Southeast Utah.

Location: Historic trail running from Escalante to Hole in the Rock in Glen Canyon NRA

Source: Lambrechtse, Rudi, Hiking the Escalante, 1985

Description: Boulder Mail Trail. Used to carry mail between Escalante and Boulder beginning in 1902. Much of trail still visible where necessary to construct through slickrock. Nominated to NRHP. Popular backpacking route.

Location: Phipps-Death Hollow ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Boynton Road. Constructed 1909 as short cut between Escalante and Salt Gulch. Abandoned after 2 years because of flooding. Visible over approx 9 of its 10 miles.

Location: Phipps-Death Hollow ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Escalante-Boulder telephone line: First Boulder-Escalante telephone line constructed by Forest Service in 1911 providing first phone service to area. Still visible between Antone Flat and Sand Creek.

Location: Phipps-Death Hollow ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Washington Phipps grave. A historical grave site of an early pioneer shot in 1878 in a dispute with his partner John Boynton. Provided the namesake for the area.

Location: Phipps Death Hollow

Source: Lambrechtse, Rudi, Hiking the Escalante, 1985

Objects of Historic Interest, August 1996 (Continued)

Description: Old Boulder Road. Main route between Escalante and Boulder until the CCC built Hell's Backbone Road and Highway 12 in 1930's to replace it.

Location: Phipps-Death Hollow ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: The Hattie Green mine, an early copper working located on the crest of The Cockscomb.

Location: The Cockscomb WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Old Paria Townsite was established in 1874 on the bench above the eastern bank of the Paria River by Mormon settlers who attempted to farm the bottomlands. Site was abandoned in 1890.

Location: adjacent to Paria-Hackberry WSA

Source: Abby, Edward and Hyde, Philip. Slickrock p.46

Description: Old Paria Townsite movie set. Built in the 1960's to film several movies. Now abandoned but still a popular recreation destination.

Location: adjacent to Paria-Hackberry WSA

Source: Abby, Edward and Hyde, Philip. Slickrock p.46

 Objects of Biological Interest, August 1996

Description: Riparian zones are corridors for many of the region's species, including neotropical migrant birds. The corridors (including the Escalante and Paria Rivers and Johnson Creek and their tributaries) bisect the region north to south, allowing for exchange of individuals among different animal populations. The importance of movement corridors to the long term viability of animal populations is of great scientific and management interest. This area would afford many opportunities to enhance this ecological issue.

Location: Entire monument proposal including the Escalante area, Kaiparowits Plateau, and areas west to Kanab including the Escalante, Paria rivers and Johnson Creek

Source: Edwards, Tom, 1996; Knopf, 1985; Armbruster and Lande 1993; Beier, 1993; Belovsky, 1987; Brown, 1971; Davidson et al. 1996; Diamond, 1981; Fahrig and Merriam, 1985; Frankel and Soule, 1981; Harris and Gallagher, 1989; Heaney, 1984; IUCN, 1978; Kushlan, 1979; Lomolino and Channell, 1995; Meffe and Carroll, 1994; Newmark, 1995; Noss, 1993; Patterson, 1984; Pickett and Thompson, 1978; Primack, 1993; Saunders et al., 1991; Shaffer, 1981; Soule, 1987; Soule and Wilcox, 1980; Wegner and Merriam, 1979; Wilcove et al., 1986; Willis, 1974.

Description: 25 miles of riparian corridor in unit. Connects mountains to desert lowlands. Has great concentration of hanging gardens and riparian vegetation, including relicual populations in canyon bottoms. Also supports many rock crevice communities. Connects other protected areas. High plant endemism, due to large extent of parent material exposure.

Location: Escalante River

Source: BLM Wilderness EIS; Knopf, 1985; Shulz, 1993; Armbruster and Lande 1993; Beier, 1993; Belovsky, 1987; Brown, 1971; Davidson et al. 1996; Diamond, 1981; Fahrig and Merriam, 1985; Frankel and Soule, 1981; Harris and Gallagher, 1989; Heaney, 1984; IUCN, 1978; Kushlan, 1979; Lomolino and Channell, 1995; Meffe and Carroll, 1994; Newmark, 1995; Noss, 1993; Patterson, 1984; Pickett and Thompson, 1978; Primack, 1993; Saunders et al., 1991; Shaffer, 1981; Soule, 1987; Soule and Wilcox, 1980; Wegner and Merriam, 1979; Wilcove et al., 1986; Willis, 1974.

Description: Riparian corridor links high country to lowland desert scrub. Connects protected areas. Has high concentrations of isolated communities: hanging garden, rock crevice and canyon bottom communities. Also has an abundance of packrat middens.

Location: Paria River

Source: Van Devender and Spaulding, 1979; BLM Wilderness EIS; Knopf, 1985; Shulz, 1993; Armbruster and Lande 1993; Beier, 1993; Belovsky, 1987; Brown, 1971; Davidson et al. 1996; Diamond, 1981; Fahrig and Merriam, 1985; Frankel and Soule, 1981; Harris and Gallagher, 1989; Heaney, 1984; IUCN, 1978; Kushlan, 1979; Lomolino and Channell, 1995; Meffe and Carroll, 1994; Newmark, 1995; Noss, 1993; Patterson, 1984; Pickett and Thompson, 1978; Primack, 1993; Saunders et al., 1991; Shaffer, 1981; Soule, 1987; Soule and Wilcox, 1980; Wegner and Merriam, 1979; Wilcove et al., 1986; Willis, 1974.

Description: Fifty miles of perennial streams including the Paria River (which is a wild and scenic river inventory segment). Riparian vegetation covers 500 acres.

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Description: Fifty miles of perennial streams including the Paria River (which is a wild and scenic river inventory segment). Riparian vegetation covers 500 acres.

Location: Paria-Hackberry WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Three major floras meet in this area. Plants from the Mojave, Arizona deserts and northern Utah are all found here, with a few species from the Great Plains. The Colorado Plateau is surrounded by high mountains, isolating the flora and fauna. Unlike many ecosystems, the plant density, diversity and stature within the monument is determined more by substrate than climate. Consequently, isolation, plus the great diversity of substrates (providing a wide range of soil chemistry and physical characteristics) found within close proximity to each other has resulted in a high level of plant endemism in this area. Eleven species found in the monument are found nowhere else in the world. Of plants that occur only in Utah or on the Colorado Plateau, 125 species occur in the monument. The Canyonlands portion of the Colorado Plateau, much of which is contained in the monument, is considered the richest floristic region in the Intermountain West, and contains 50% of Utah's rare and endemic plants. 90% of these rare and endemic species are found on substrates typical of most of the monument. Of the Canyonlands area, the monument area is considered one of the most significant for endemic populations, with more than 10% of the flora being found no nowhere else.

Of additional significance is that many of the plants in the monument are diploid species. This means they represent the basic genetic stock from which polyploid species in the area evolved. This makes this area of great significance to plant evolutionary biologists and provides a unique opportunity to study the evolution and speciation of plant species, as well as the structure and dynamics of plant communities, independent of climate.

Location: Entire monument

Source: Kaiparowits Power Project EIS; Axelrod, 1960; Utah Natural Heritage Program plant database; Nabhen and Wilson, 1996; Shulz, 1993; Albee et al., 1988; Welsh, 1974; Welsh et al. 1975; Hintze, 1988; Dott, 1996; Shreve, 1942; Cronquist et al., 1977; Utah Natural Heritage Program plant database

Description: The Colorado Plateau was uplifted and downcut without deformation. As a consequence, large areas of unmixed geologic parent materials are exposed, and plants must adapt to large array of highly distinct parent materials. These substrates are sharply demarcated, and often occur within a few meters of each other. This situation offers the unique opportunity to examine the role of soil physical and chemical characteristics in determining plant and animal community structure independent of climatic variables, an important ecological question. It also results in different plant community structure and dynamics than is generally observed in other ecosystems. This area contains shales, siltstones, mudstones, sandstones and limestone of differing depths, and deposited in a variety of environments (marine, freshwater and eolian). Each soil depth and depositional environment has very different chemical and physical characteristics. As a result, there is a great diversity of substrates in this area, each supporting a unique plant community.

Location: Entire monument

Source: Hintze, 1988; Nabhen and Wilson, 1996; Gross, 1987; Dott, 1996; Roberts, 1987

Description: The presence of steep elevational gradients gives the opportunity to sort out the role of temperature and precipitation in structuring plant and animal communities. Elevational gradients have traditionally been used by scientists as a way of examining factors controlling biotic community structure. Juxtaposition of diverse substrates and elevational gradients gives an unparalleled opportunity to determine the respective roles of soil chemistry, physical characteristics, elevation, rainfall and temperature in structuring biotic communities. In addition, it allows for high biodiversity in a small area.

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Description: The Escalante Plateau is the home to approximately 300 species of amphibians, birds, mammals, and reptiles. This diverse set of wildlife species includes over 20 species of birds of prey including the bald eagle, peregrine falcon, and was the historical range of the condor. The region contains 2 of the 7 recognized centers of endemism for fishes of the western United States.

Location: Escalante Plateau

Source: Davidson et al. 1996; Tom Edwards, 1996; Behnke, R.J., and Zar, M., 1976

Description: Contains many different geologic substrates (therefore soils with different physical and chemical attributes) in a small area. The majority of endemic in Utah are found on these particular substrates; consequently, this area is expected to have a high concentration of endemics.

Location: Escalante -along boundary of Glen Canyon NRA and Capital Reef National Park

Source: Utah Natural Heritage Program plant database; Nabhen and Wilson, 1996; Shulz, 1993; Albee et al., 1988; Welsh, 1974; Welsh et al. 1975; Hintze, 1988

Description: Large expanses of fine-textured soils (Morrison, Mancos/Tropic) shales support large number of endemic plant species, fossils.

Location: Henrieville to Escalante

Source: Hintze, 1988; Shulz, 1993; BLM Wilderness EIS

Description: An exposed monocline with many soils/substrates in close juxtaposition provides tremendous biodiversity of both general and endemic flora. High salt content of stream provides habitat for salt-tolerated riparian plants. Provides a elevational gradient from ponderosa pine to desert scrub. In addition, the rocky substrate has provided refugia for many Arcto-Tertiary plants, providing a unique opportunity to examine the effects of ancient floral presence in the structuring of present-day plant communities. This area also supports a very high diversity of both general and endemic flora.

Location: The Cockscomb

Source: Hintze, 1988; Shulz, 1993; Albee et al., 1988; Axelrod, 1960; Welsh, 1978; Stevens, 1992; Dott, 1996;

Description: Contains a concentration of many different geologic substrates/soils with different physical and chemical attributes. This area has a high concentration of endemics. This boundary also abuts protected areas (Glen Canyon, Capitol Reef), thereby effectively increasing the value of all three areas for biological conservation. In addition, the Waterpocket Fold has isolated two outcrops of the same parent material. These two areas now support different floras. This presents an outstanding scientific opportunity to explore processes of speciation.

Location: Far eastern boundary

Source: Hintze, 1988; Shulz, 1993; Albee et al., 1988; Axelrod, 1960; Welsh, 1978; Stevens, 1992; Dott, 1996; Armbruster and Lande, 1993; Fahrig and Merriam, 1985; Beier, 1993; Belovsky, 1987; Brown, 1971; Davidson et al, 1996; Diamond,

Objects of Biological Interest, August 1996 (Continued)

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Description: This is an exposed monocline. Consequently, many substrates (Summerville, Morrison, Dakota, Tropic, Entrada, Navajo, Wingate and Carmel) are exposed directly next to each other, providing an opportunity for studies of ecological processes independent of climate. This monocline also has an elevational gradient, facilitating the study of effects of temperature and moisture on community dynamics. In addition, the rocky substrate has provided refugia for many Arcto-Tertiary plants, providing a unique opportunity to examine the effects of ancient floral presence in the structuring of present-day plant communities. This area also supports a very high diversity of both general and endemic flora.

Location: Straight Cliffs area

Source: Hintze, 1988; Shulz, 1993; Albee et al., 1988; Axelrod, 1960; Welsh, 1978.

Description: Diversity of plant life ranging from low desert shrub to Ponderosa Pine (less than 1 mile apart) enhances the study and observation of ecology. 3 small stands of Ponderosa pine in Alvey Wash.

Location: Death Ridge WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Contained within the monument are 3-5 spatially separated areas where the same substrates are exposed in close proximity to each other. In addition, there are 5 elevational gradients along riparian corridors. This is critical for replicated scientific work to be conducted.

Location: Entire monument

Source: Hintze, 1988; USGS Topographical Maps

Objects of Biological Interest, August 1996 (Continued)

Description: Riparian corridor with elevational gradient, connecting desert low lands to the high country. Vermillion, White, Pink Cliffs (Triassic, Jurassic, Cretaceous material).

Location: Johnson's Creek

Source: Hintze, 1988; USGS Topographical Maps; Beier, 1993; Noss, 1992, 1993

Description: Fifty Mile Mountain. Presence of aspen on Pleasant Grove, Steer Canyon, and Pinto Mare Canyons.

Location: Fifty Mile Mountain WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Protects lands at low elevation sites frequently rich in species diversity. The range of elevation in these areas from approximately 4500-8300 feet encompasses a wide variation in elevation and will capture the full diversity of plant and animal species in the region.

Location: Entire monument proposal including the Escalante area, Kaiparowits Plateau, and areas west to Kanab

Source: Hintze, 1988; Utah BLM Final Wilderness EIS, 1990

Description: The monument contains an abundance of hanging gardens, tinajas, canyon bottom, dunal pockets, salt-pocket and rock crevice communities. These small, isolated populations often contain unusual, often relictual plants and animals. Hanging gardens and canyon bottom communities harbor riparian plants and their pollinators, as well as unique vertebrates (bats and small mammals) and soil fauna. Tinajas are important aquatic resources, and contain a diverse array of tadpole, fairy and clam shrimp, amphibians, algae, water beetles, other crustaceans, snails, mosquito and gnat larvae and aquatic/riparian plants. Highly saline areas are found around many seeps and streams, and consist of plants and animals adapted to highly saline conditions. Dunal pockets contain species adapted to shifting sands, while rock crevice communities consist mostly of slow-growing species that can thrive in extremely infertile sites. These communities offer a chance to examine gene flow dynamics, and to distinguish the respective role of pollen versus seeds. They offer an opportunity to study ground water flow dynamics in the absence of significant fluvial processes, and island biogeography of plants, pollinators and ground-dwelling biota. They also are highly simplified, discrete ecosystems, making them ideal for elucidating basic ecosystem processes.

Location: Entire monument

Source: Nabben and Wilson, 1996; Harper et al., 1994; Welsh et al., 1993; May et al., 1995; Fowler et al., 1995; Graff, 1988

Description: These canyons provide a high concentration of isolated, unique plant and invertebrate communities: hanging garden, rock crevice, and canyon bottom communities. Many relictual plant species can be found in these communities. Pack rat middens are abundant, providing paleoclimate and paleo-vegetation information.

Objects of Biological Interest, August 1996 (Continued)

 Location: Escalante Canyons

Source: Axelrod, 1960; BLM Wilderness EIS; Van Devender and Spauling, 1979; Fowler et al., 1995; Nabhen and Wilson, 1996

Description: Dunal pockets contribute Great Plains species to the flora. These are unique, isolated plant communities.

 Location: Cockscomb to Kaiparowits

Source: Hintze, 1988

Description: Unique, isolated communities are located throughout the monument. These include hanging gardens, tinajas, canyon bottom, dunal pocket, salt pocket and rock crevice communities. They provide great opportunities for examining evolution, gene flow, island biogeography and other ecological principles.

 Location: Entire monument

Source: Case and Cody, 1988; Diamond, 1981; Dott, 1996; Harris, 1984; Ludwig and Whitford, 1981; Fowler et al., 1995; Nabhen and Wilson, 1996; Roberts, 1987; Reice, 1994; Axelrod, 1960

Description: Biological conservation theory and literature suggests that large contiguous conservation areas increase both extent and probability of population survival, increases protection of migratory pathways, and is the most effective means of conserving aquatic and riparian communities.

 Location: Entire monument

Source: Soule, 1987; Davidson et al., 1996; Miller, 1961; Minckley and Deacon, 1968; Armbruster and Lande, 1993; Fahrig and Merriam, 1985; Beier, 1993; Belovsky, 1987; Brown, 1971; Davidson et al. 1996; Diamond, 1981; Frankel and Soule, 1981; Harris and Gallagher, 1989; Heaney, 1984; IUCN, 1978; Kushlan, 1979; Lomolino and Channell, 1995; Meffe and Carroll, 1994; Newmark, 1995; Noss, 1993; Patterson, 1984; Pickett and Thompson, 1978; Primack, 1993; Saunders et al., 1991; Shaffer, 1981; Soule, 1987; Soule and Wilcox, 1980; Wegner and Merriam, 1979; Wilcove et al., 1986; Willis, 1974.

Description: The connection with Glen Canyon provides a larger protected area. It also provides low desert vegetation as part of the vegetational gradients. Large areas are important for maintaining the evolutionary potential of plants and animals, allowing for the exchange of genetic material among the separate populations that constitute a population.

 Location: Common boundaries and riparian connections with Glen Canyon NRA, Capitol Reef NP, Box Hollow Wilderness and Paria Wilderness

Source: Hintze, 1988; Shulz, 1993; Albee et al., 1988; Axelrod, 1960; Welsh, 1978; Stevens, 1992; Dott, 1996; Armbruster and Lande, 1993; Fahrig and Merriam, 1985; Beier, 1993; Belovsky, 1987; Brown, 1971; Davidson

Objects of Biological Interest, August 1996 (Continued)

et al. 1996; Diamond, 1981; Frankel and Soule, 1981; Harris and Gallagher, 1989; Heaney, 1984; IUCN, 1978; Kushlan, 1979; Lomolino and Channell, 1995; Meffe and Carroll, 1994; Newmark, 1995; Noss, 1993; Patterson, 1984; Pickett and Thompson, 1978; Primack, 1993; Saunders et al., 1991; Shaffer, 1981; Soule, 1987; Soule and Wilcox, 1980; Wegner and Merriam, 1979; Wilcove et al., 1986; Willis, 1974.

Description: Cryptobiotic soil crusts are critical for soil stability, nutrient availability for vascular plants and normal soil surface temperatures. These crusts are extremely fragile and easily disrupted by soil surface disturbances such as trampling or off-road vehicles. Since the soils in the monument are highly susceptible to erosion, it is important that these biocrusts be protected so they stabilize these erodible soil surfaces. In addition, these ecosystems have few nitrogen-fixing plants. Since these crusts provide nitrogen to these soils, they are a critical part of these nitrogen-limited ecosystems.

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Location: Entire monument

Source: Belnap, 1994, 1995; Belnap and Harper, 1993; Belnap et al., 1994; Jefferies, 1989; Harper and Marble, 1988; Johansen, 1993; Mack and Thompson, 1978; Fleischner, 1994

Description: Disturbance of most soil surfaces in the monument area will result in soil surface temperature changes, as bio-crusts are darker than the substrates underneath them. The expected lowering of temperature with disturbance would result in cooler soil temperatures, and thus later spring plant germination and lower nutrient uptake rates. This may adversely effect desert plant growth in early spring. Surface temperatures also influence foraging and burrowing patterns for many soil invertebrates, and many effect community dynamics of these species.

.....
Location: Entire monument

Source: Ludwig and Whitford 1981; Belnap 1995

Description: Ecosystems in this area are some of the most stable documented to date, as both large and small scale disturbances are limited spatially and temporally. Very little of this area was glaciated in the Pleistocene. Most plant communities evolved without fire or grazing by large ungulate herds, as evidenced by characteristics of the soils and the flora. Catastrophic events are minimal, with the exception of wash bottoms. Microsite disturbances are minimal as well, as most soils support very low populations of invertebrates. 1880 photos repeated in 1990 show many sites virtually unchanged, with the same tree, shrub and grass individuals present, indicating very low species turnover rates in this region relative to other ecosystems. In addition, dead tree branches can still be found in virtually the same condition as they were 100 years ago, indicating plant tissue decomposition rates are extremely low in this region. This makes this area highly unique, as most ecosystems are believed to be structured disturbance. In this region, ecological processes can be studied independent of the effects of disturbance to give us greater insight into their functioning (i.e. factors controlling exotic plant invasions, species-species interactions, etc.)

Soil physical, chemical and biological features appear to be both easily damaged (low resistance) by surface disturbance and have very slow recovery rates (low resilience) when compared to other deserts or more mesic systems. This may be a result of evolution of this ecosystem evolving in the relative absence of disturbance (Belnap 1995, 1996). Therefore, this area is important in the study of how disturbance influences community dynamics, including species-species interactions, and for understanding how to restore these fragile systems. This also means that this area is highly susceptible to damage by different land uses, including recreation and grazing.

Objects of Biological Interest, August 1996 (Continued)

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 Location: Entire monument

Source: Belnap, 1995, 1996; Belnap et al., 1994; Mack and Thompson, 1982; Fleischner, 1994; Kleiner and Harper 1972; Harper et al., 1994; Webb, 1994; Rogers, 1982; Pickett and White, 1985; Moldenke, 1995; Evans and Ehleringer, 1993; Turner et al., 1993; Iverson et al., 1981; Webb and Wilshire 1981; Larsen 1996; Bowers et al., 1994

Description: Isolation of this area has resulted in minimal human impacts. Many of the ecosystems found in this area have received little, if any, human use and the type and extent of disturbance has that has occurred is known. In addition, there are large areas unbroken by roads. This is essential to the protection and conservation of plant and animal species.

.....
 Location: Entire monument

Source: Wilcox et al. 1986; Wilcox and Murphy 1985; Mader et al., 1990; Osley, et al., 1974; Rost and Bailey, 1979; Wilmer and Calesta, 1985

Description: The monument lacks any areas that have been invaded to any large extent by exotic species. There are few such areas in the Intermountain West, and they can provide invaluable information in understanding the ecology and dynamics of exotic plant invasion. These areas aid scientists in understanding what makes systems resistant to such invasions, and thus help land managers predict what areas are susceptible to invasion and restore already-invaded regions.

.....
 Location: Entire monument

Source: Billings, 1994; Fleischner, 1994; Forcella and Harvey, 1983; Gross, 1987; Hunter, 1990; Loope et al., 1988; MacMahon, 1987; Pellant and Hall, 1994

Description: Six threatened or endangered candidate species are located within or near this area.

.....
 Location: Wahweap WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Contains Peregrine falcon (endangered) and 6 special status animal species and 5 special status plant species.

.....
 Location: Mud Spring WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Habitat for Swainson's hawk, golden eagle (Sensitive) and peregrine falcon (endangered).

Objects of Biological Interest, August 1996 (Continued)

Location: The Blues WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Peregrine falcon and bald eagle (endangered). 8 animal and 5 plant species of special status.

Location: Paria-Hackberry and Cockscomb WSA and Wahweap WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Thirteen species of raptors are known or suspected of nesting in the WSA

Location: Burning Hills WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Relict plant community in the upper part of Dry Valley "probably possesses important scientific values"

Location: Mud Spring Canyon WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Unique relict plant community of pinion-juniper and sagebrush-grass park vegetation accessible only by a steep trail. One of the few remaining unaltered plant communities in Utah. No Man's Mesa RNA was designated as an ACEC in 1986. Such areas are invaluable to science. They provide restoration and management goals for administration of lands. Such areas are also critical to scientists who are trying to understand the natural functioning of ecosystems. Grasslands are especially valuable, as almost all have been heavily grazed for over a century.

Location: Paria-Hackberry WSA (No Man's Mesa and Little No Man's Mesa)

Source: Utah BLM Statewide Final Wilderness EIS, 1990 and Kleiner and Harper, 1972

Description: Four Mile Bench Old Tree Area. Unique area of extremely old (1,400 years) pinon and juniper trees. Unique scientific values on over 1,000 acres.

Location: Wahweap WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: This region is at the northern end of areas that receive summer monsoonal rains, and is at the southern end of areas that depends on winter rains. This distinction is very important to the physiological

Objects of Biological Interest, August 1996 (Continued)

functioning of plants in this moisture-limited areas, as even minor changes in temperature and/or rainfall may lead to major differences in water availability, and consequently, plant metabolic processes. Climate change is expected to alter both rainfall timing and amount, as well as temperature. This, in turn, would alter plant physiology, water use patterns and community composition in this region, making the monument an excellent place for studying global climate change.

Location: Entire monument

Sources: Ayyad 1981; Graff 1988; Van Devender and Spaulding 1979; Wagner 1981

Description: Unlike most deserts that are primarily depositional environments, the CP is an erosional one (Welsh 1979; Nat Hist). This contributes to high endemism, as substrate material is not mixed. In addition, it makes this region highly susceptible to soil loss when surfaces are disturbed. This soil loss has a negative impact on plant and aquatic communities, as well as dam sediment loads.

Location: Entire monument

Source: Welsh, 1979; Harper et al., 1994

Description: The effects of scaling up and down are not known for many ecological processes. The multitude of variably sized, discrete watersheds found in this area offer a unique opportunity to test the effects of scaling for hydrological and biological processes. In addition, the close spacing of these watersheds offers a chance to separate the effects of area per se from other environmental factors on community structure.

Location: Entire monument

Source: Allen and Hockstra 1987; Reice 1994; Pickett and White 1985; Rosenweig 1985

Description: Semi-arid and arid lands of the western United States are highly susceptible to desertification. The lack of natural disturbance in much of this area offers the opportunity to study the effects of different types and levels of land use and to better understand the steps leading to desertification.

Location: Entire monument

Source: Dregne, 1983

Description: This area contains few exotic plants. Having this resource gives the opportunity to better understand what factors inhibit or facilitate exotic plant invasions. Roads have been heavily implicated in facilitating exotic plant invasion, while intact Cryptobiotic soil crusts and less favorable soil chemistry may inhibit such an invasion. Invasion could fundamentally alter these communities, by altering species composition, community dynamics and fire cycles.

Location: Entire monument

Source: Monsen and Kitchen, 1994; Kelly 1996; Harper and Marble 1988; Davidson et al. 1996

Objects of Biological Interest, August 1996 (Continued)

Description: Quaternary resources are abundant in the monument. Pack rat middens enable reconstruction of paleoclimates and paleo-vegetation, while Pleistocene animal remains found in alcoves.

Location: Entire monument

Source: Harper et al., 1994

Description: Unlike more mesic ecosystems, there is little evidence that desert communities demonstrate traditional successional sequences. There is little or no modification of soils or other site characteristics by previous-occurring plants. Understanding of this is important for restoration efforts. The monument offers an excellent opportunity to study this phenomenon independent of climate and disturbance factors.

Location: Entire monument

Source: Barbour, 1981; MacMahon, 1987; Shreve, 1942; Dott, 1996

Description: Peregrine falcon and Bald Eagle use these areas. Areas are habitat for 7 plant and 9 animal species considered sensitive.

Location: Death Ridge and Fifty Mile Mountain WSAs

Source: Utah Statewide Wilderness Study Report, 1991

Description: Peregrine falcon and Bald Eagle use these areas. Areas are habitat for 8 plant and 7 animal species considered sensitive.

Location: Phipps Death Hollow ISA and Steep Creek WSA

Source: Utah Statewide Wilderness Study Report, 1991

Description: Peregrine falcon and Bald Eagle use these areas. Areas are habitat for 9 plant and 7 animal species considered sensitive.

Location: North Escalante Canyon, The Gulch and Carcass Canyon WSAs

Source: Utah Statewide Wilderness Study Report, 1991

Exhibit -- C

Bibliography of Sources Concerning Objects of Interest in the
Grand Staircase - Escalante National Monument

I. Geology resources

Mineral deposits

Carey, Dwight, et al. Kaiparowits Handbook: Coal Resources (Los Angeles: Institute of Geophysics and Planetary Physics, University of California, 1975).

Doelling, Hellmut. Carcass Canyon Coal Area, Kaiparowits Plateau, Garfield and Kane Counties, Utah (Salt Lake City: Utah Geological and Mineralogical Survey, 1968)

Heylman, Edgar. Paleozoic Stratigraphy and Oil Possibilities of Kaiparowits Region, Utah (Salt Lake City: Utah Geological and Mineralogical Survey, University of Utah, 1966, 1958).

Jepperson, Ronald, et al. The Kaiparowits Coal Project and the Environment: A Case Study (Ann Arbor: Ann Arbor Science Publishers; and Palo Alto: Electric Power Research Institute, 1981).

Kunkel, R. P., 1965. History of exploration for oil and natural gas in the Kaiparowits region, Utah, in Geology and resources of south-central Utah -- Resources for power: Utah Geological Society Guidebook to Geology of Utah 19, p. 93-111.

Sargent, K.A. Environmental Geologic Studies of the Kaiparowits Coal-Basin Area, Utah. U.S. Geological Survey Bulletin 1601, 1984.

Utah Coal for Southwest Gas Markets: A New Concept for Utah Coal and a New Industry for the Kaiparowits Plateau (Salt Lake City: Kaiser Engineers, 1977).

Geology

Baars, Donald. The Colorado Plateau: A Geologic History (Albuquerque: University of New Mexico Press, 1983).

Beus, Stanley and Morales, Michael, eds. Grand Canyon Geology. (New York, NY: Oxford University Press; reprint edition Flagstaff, AZ: Museum of Northern Arizona Press, 1990).

Blanchard, Paul. Ground-water Conditions in the Kaiparowits Plateau Area, Utah and Arizona, with Emphasis on the Navajo Sandstone (Salt Lake City: Utah Department of Natural Resources, 1986).

Carter, L. M. H., and Sargent, K. A., 1983 (1984), Scenic features related to geology in the Kaiparowits Plateau area, Utah: U.S. Geological Survey Miscellaneous Investigations Map I-1033-K, scale 1:125,000.

Craig, L.C., Holmes, C.N., Cadigan, R.A., Freeman, V.L., Mullens, T.E., and Weir, G.W., 1955, Stratigraphy of the Morrison and related formations, Colorado Plateau region, a preliminary report: U.S. Geological Survey Bulletin 1009-E, 168 p.

Davidson, E. S., 1967. Geology of the Circle Cliffs area, Garfield and Kane Counties, Utah: U.S. Geological Survey Bulletin 1229, 140p.

Doelling, H.H., 1975. Geology and mineral resources of Garfield County, Utah: Utah Geological and Mineralogical Survey Bulletin 107, 175 p.

Doelling, H.H., and Davis, F.D., 1989, The geology of Kane County, Utah--Geology, mineral resources, geologic hazards: Utah Geological and Mineral Survey Bulletin 124 and Map 121, 192 p., 10 pls., scale 1:100,000

Doelling, H. H., and Graham, R. L. 1972, Southwestern Utah coal fields -- Alton, Kaiparowits Plateau and Kolob-Harmony: Utah Geological and Mineralogical Survey Monograph I, 333 p.

Dutton, C.E.: Report on the Geology of the High Plateaus, Government Printing Office, Washington, 1880.

Dutton, Clarence. Topographical and Geological Atlas of the District of the High Plateaus of Utah (New York: Julius Bien Lithographers, 1879).

Fuller, H.K., V.S. Williams, R.B. Colton. 1981. Map Showing Areas of Landsliding in the Kaiparowits Coal Basin Area, Utah. U.S. Geological Survey Miscellaneous Investigations Series Map I-1033-H, scale 1:125,000.

Gregory, H. E., and Moore, R. C., 1931. The Kaiparowits region, a geologic reconnaissance of parts of Utah and Arizona: U.S. Geological Survey Professional Paper 164, 161

Gregory, H.E., 1951. The geology and geography of the Paunsaugunt region. U.S. Geological Survey Professional Paper 220.

Gregory, H. E., 1948, Geology and geography of central Kane County, Utah: Geological Society of America Bulletin, v. 59, no. 3, p. 211-248.

Hintze, Lehi. Geologic History of Utah (Provo, UT: Brigham Young University Department of Geology, 1988).

Lewis, G.E., Irwin, J.H., and Wilson, R.F., 1961, Age of the Glen Canyon Group on the Colorado Plateau: Geological Society of America Bulletin, v. 72, no. 9, p. 1437-1440.

Lidke, K.J. and Sargent, K.A., 1983. Geologic cross sections of the Kaiparowits coal-basin area, Utah: U.S. Geological Survey Miscellaneous Investigations Series Map I-1033-J, scale 1:125,000.

Peterson, Fred. "Four New Members of the Upper Cretaceous Straight Cliffs Formation in the Southeastern Kaiparowits Region Kane County, Utah." 1969. Geological Survey Bulletin 1274-J

Plantz, Gearld G. Hydrologic Reconnaissance of the Kolob, Alton, and Kaiparowits Plateau Coal Fields, South-Central Utah. U.S. Geological Survey. Open-File Report 84-071. 1984

Sargent, K. A., and Hansen, D. E., 1976, General geology and mineral resources of the coal area of south-central Utah, with section on Landslide Hazards by Roger B. Colton, Coal Mine Subsidence by C. Richard Dunrud, and Landscape Geochemistry by J.J. Connor: U.S. Geological Survey Open-File Report 76-811, 122p.

Sargent, K.A., and Hansen, D.E., 1980. Landform map of the Kaiparowits coal-basin area, Utah: U.S. Geological Survey Miscellaneous Investigations Series Map I-1033-G, scale 1:125,000.

Shanley, Keith, "Predicting Facies Architecture Through Sequence Stratigraphy--An Example from the Kaiparowits Plateau, Utah." Geology, vol. 19, no. 7 (July 1, 1991) pp. 742-745.

Steed, R. H., 1954, Geology of Circle Cliffs anticline, in Geology of portions of the high plateaus and adjacent lands, central and south-central Utah: Intermountain Association of Petroleum Geologists Annual Conference, 5th, 1954, Guidebook, p. 99-102.

Stokes, William Lee. Geology of Utah. Utah Museum of Natural History.

Stratigraphy, Depositional Environments, and Sedimentary Tectonics of the Western Margin, Cretaceous Western Interior Seaway (Boulder, CO: Geological Society of America, 1991).

Williams, V.S., 1985, Surficial geologic map of the Kaiparowits coal-basin area, Utah: U.S. Geological Survey Miscellaneous Investigations Series Map I-1033-L, scale 1:125,000.

II. Paleontology resources

Cifelli, Richard, "Cretaceous Mammals of Southern Utah." Journal of Vertebrate Paleontology, vol. 10, no. 3 (Sept. 20, 1990) pp. 293-360.

Cifelli, R.L., 1987 Therian Mammals from the Late Cretaceous of the Kaiparowits Region, Utah (abstract). Journal of Vertebrate Paleontology, Vol. 7, Supplement to No. #, Abstracts of Papers, Forty-Seventh Annual Meeting, Society of Vertebrate Paleontology, p. 14A.

Cifelli, R.L., and J.G. Eaton. 1987. Marsupial from the Earliest Late Cretaceous of Western United States. Nature 325. p. 520-522.

Cifelli, Richard & Eaton, Jeffery, "Preliminary Report on Late Cretaceous Mammals of the Kaiparowits Plateau, Southern Utah." Contributions to Geology, vol. 26, no. 2 (Fall 1988) pp. 45-55.

Eaton, Jeffery G., Correspondence with Mike Noel, Kanab Resource Area, 1991.

Eaton, J.G. 1987. Mammalian Paleontology and Correlation of the Uppermost Cretaceous rocks of the Paunsaugunt Plateau, Utah. in M. Morales, ed. Aspects of Mesozoic Geology and Paleontology of the Colorado Plateau. Museum of Northern Arizona Bulletin 59. p. 163-180.

Eaton, J.G. 1993b. Therian Mammals from the Cenomanian (Upper Cretaceous) Dakota Formation, Southwestern Utah. Journal of Vertebrate Paleontology, 13(1). p. 105-124.

Eaton, J.G., 1987 Stratigraphy, Depositional Environments, and Age of Cretaceous Mammal-Bearing Rocks in Utah, and Systematics of the Multituberculata (Mammalia). Ph.D. dissertation, University of Colorado, Boulder, Colorado. 308 p.

Eaton, Jeffrey G., Biostratigraphic Framework for late Cretaceous nonmarine sequence, Kaiparowits Plateau, Southern Utah.

Elder, W.P. and J.I. Kirkland. 1993 Cretaceous Paleogeography of the Colorado Plateau and Adjacent Area. in M. Morales, ed. Aspects of Mesozoic Geology and Paleontology of the Colorado Plateau. Museum of Northern Arizona Bulletin 59, p. 129-152.

Miller, Wade E., Paleontological Literature Search of Alternative Plant Sites for the Utah Power and Light Company. 1975

III. Prehistoric resources (Anthropology/Archaeology)

Barnes, F.A., Canyon Country Rock Art (Salt Lake City, UT: Wasatch Publishers, Inc., 1982).

Castleton, Kenneth. Petroglyphs and Pictographs of Utah, 2 vols. (Salt Lake City: Utah Museum of Natural History, 1979).

Cole, Sally J., Legacy on Stone: Rock Art of the Colorado Plateau and Four Corners Region (Boulder, CO: Johnson Books, 1990).

Fish, Paul, Preliminary Report for Archaeological and Ethnohistorical Phase I Consultation for the Kaiparowits Power Project: Proposed Plant Sites, Impact Study Area and Proposed Transmission Line Corridors, Museum of Northern Arizona, Department of Anthropology

Fowler, Don. 1961 Excavations, Kaiparowits Plateau, Utah (Salt Lake City: Department of Anthropology, University of Utah 1963) Anthropological Papers, University of Utah Department of Anthropology no. 66, Glen Canyon Series no. 20.

Gunnerson, James H., "Archaeological Survey of the Kaiparowits Plateau" in The Glen Canyon Archeological Survey, Salt Lake City, University of Utah Press, 1959

Hauck, Forrest. Cultural Resource Evaluation in South Central Utah, 1977-78 (Salt Lake City, UT: U.S. Bureau of Land Management Utah Office Cultural Resource Series no. 4, final report for contract 14-08-0001-16494, 1979).

Janetski, Joel, ed.: University of Utah. Department of Anthropology, Archeological Center. Prehistoric and Historic Settlement in the Escalante Desert (Salt Lake City: University of Utah Press, 1981).

Madsen, David. Prehistory of the Eastern Great Basin, 2 vols. (Washington, D.C.: Smithsonian Institution, 1979, 1986).

Marshall, Larry G., Paleontological Investigations Phase I - Kaiparowits Power Project; Report of Paleontological Resources on Plant Sites, Related Facilities, Associated Access Roads, Impact Area and Proposed Transmission Lines., Museum of Northern Arizona, Department of Geology, 1974.

Schaafsma, Polly. The Rock Art of Utah (Cambridge: Papers of the Peabody Museum of Archaeology and Ethnology, vol. 65, 1971).

University of Nevada, Las Vegas: Museum of Natural History, Nevada Archaeological Research Center. Final Report on the Preliminary Archaeological Reconnaissance of the Proposed Eldorado/Kaiparowits Transmission Line Right-of-Way: Corridor and Alternate Routes (Las Vegas: University of Nevada, Las Vegas, 1977).

IV. History resources

General

Coppel, Lynn. Kaiparowits: "It may be your playground but it's my home." (Fullerton, CA: California State University, 1979) Master's thesis, typescript of oral history project.

Gregory, Herbert. "Scientific Explorations In Southern Utah." American Journal of Science, vol 243, no. 10. (October, 1945).

Powell, Allan, ed. Utah History Encyclopedia. (Salt Lake City, UT: University of Utah Press, 1994).

Thompson, George. Some Dreams Die: Utah's Ghost Towns and Lost Treasures. (Salt Lake City, UT: Dream Garden Press, 1982).

Van Cort, John. Utah Place Names. (Salt Lake City, UT: University of Utah Press, 1990).

Woodbury, Angus. A History of Southern Utah and Its National Parks (Salt Lake City: Utah State Historical Society, 1944, 1950).

Mormon era--includes sources for Hole-in-the-Rock expedition

Decker, Elizabeth. Biography (Salt Lake City: Daughters of the Utah Pioneers Museum manuscript collection).

Family Histories of Edwards, Robb and Worlton Families (St. George, UT: Dixie College, manuscript collection).

Gleave, Eva, ed. Journal-Stories of Elder Adelbert Twitchell, 1866-1950 (Salt Lake City: ?, 1979).

Lyman, Platte. Platte DeAlton Lyman Journal (Berkeley: University of California manuscript collection, 1879, 1894).

Miller, David. Hole-in-the-Rock: An Epic in the Colonization of the Great American West (Salt Lake City: Publisher's Press, 1966).

Reay, Lee. Through the Hole in the Rock to San Juan (Provo, UT: Meadow Lane Publications, 1980).

Smart, William. Old Utah Trails (Salt Lake City: Utah Geographic Series, 1988).

Smith, Albert, ed. Silas Sanford Smith: Pioneer, Statesman, Colonizer 1847-1910 (Provo, UT: Brigham Young University manuscript collection, 1963).

Woolsey, Nethella. The Escalante Story: A History of the Town of Escalante, and Description of the Surrounding Territory, Garfield County, Utah, 1875-1964 (Springville, UT: Art City Publishers, 1964).

V. Biology resources

Albee, BJ, LM Shultz, and S Goodrich. "Atlas of the vascular plants of Utah". Occasional Publications 7, Utah Museum of Natural History. (Salt Lake City, UT: University of Utah, 1988).

Allen, TFH and TW Hoekstra. Problems of scaling in restoration ecology. (Cambridge, Great Britain: Cambridge University Press, 1981).

Armbruster, P and R. Lande. "A population viability analysis for African elephants: how big should a reserve be?". Conservation Biology, vol. 7, (1993) pp. 602-610.

Atwood, K. J. Holland, R. Bolander, B. Franklin, DE House, L. Annstrong, K. Thorne and L. England. Utah threatened, endangered and sensitive plant field guide. (USDA/USFS/BLM/NPS, 1991)

Axelrod, DI. 1960. The evolution of lowering plants. in Tax, S., Evolution after Darwin. The evolution of life, Vol. 1. (Chicago, IL: University of Chicago, 1960. pp. 227-305)

Ayyad, MA. "Soil-vegetation-atmosphere interactions". in Goodall, D. W. and Perry, R.A., eds, Aridland ecosystems, International Biome Programme Publications #17, (Cambridge, MA: Cambridge University Press, 1981).

Barbour, MG. "Plant-plant interactions". in Goodall, D.W. and Perry, R.A., eds, Aridland ecosystems, International Biome Programme Publications #17, (Cambridge, MA: Cambridge University Press, 1981).

Behnke, R. J. "Native trout of western North America." American Fisheries Society Monograph. vol. 6, (1992).

Behnke, R. J., and M. Zar. 1976. "Biology and management of threatened and endangered western trouts." (Ft. Collins, CO: Technical Report RM-GTR-28, USDA Forest Service, 1976).

Beier, P. "Determining minimum habitat areas and habitat corridors for cougars." Conservation Biology. vol. 7, (1993) pp. 94-108.

Belnap, J. 1994. Potential role of cyanobacterial-lichen soil crusts. in SB Monsen and SG Kitchen, eds, Proceedings: Ecology and Management of Annual Rangelands (Ogden, UT: USDA INT-GTR-313, 1994). pp. 179-185.

Belnap, J. Soil surface disturbances: their role in accelerating desertification. Environmental Monitoring and Assessment. vol. 37, (1995) pp. 39-57.

Belnap, J. Soil surfaces disturbances in cold deserts: effects on nitrogenase activity in cyanobacterial-lichen crusts. Biology and Fertility of Soils. in press.

Belnap, J. and KT Harper. The influence of cryptobiotic soil crusts on elemental content of tissue in two esert seed plants. Arid Soil Research and Rehabilitation. vol. 9, (1995) pp. 107-115.

Belnap, J, KT Harper and SD Warren. "Surface disturbance of cryptobiotic soil crusts: nitrogenase activity,

chlorophyll content, and chlorophyll degradation." Arid Soil Research and Rehabilitation, vol. 3, (1994) pp. 1-8.

Belovsky, GE. 1987. "Extinction models and mammalian persistence". in Soule, M.E., ed. Viable populations for conservation. (Cambridge, UK: Cambridge University Press, 1987). pp. 35-57.

Bergelson, J, JA Newman, and EM Floresroux. "Rates of weed spread in spatially heterogenous environments." Ecology, vol. 74, (1993) pp. 999-1011.

Billings, WD. " Ecological impacts of cheatgrass and resultant fire on ecosystems in the western Great Basin." in SB Monsen and SG Kitchen, eds. Proceedings: Ecology and Management of Annual Rangelands. (USDA INT-GTR-313, Ogden UT: 1994) pp. 2-30.

Brown, JH. "Mammals on mountaintops: nonequilibrium insular biogeography." American Naturalist, vol. 105, (1971) pp. 467-478.

Bowers, J.E., Webb, R.H., and Rondeau, R.J., "Longevity, recruitment, and mortality of desert plants in Grand Canyon, Arizona, U.S.A." Journal of Vegetation Science, v. 6, (1995) p. 551-564.

Case, TJ and ML Cody. 1988. "Testing theories of island biogeography." American Scientist, vol. 75 (1988). pp. 402-411.

Chronic, H. Roadside geology of Utah. (Missoula, MT: Mountain Press Publishers, 1990).

Cronquist, A., AH Holmgren, NH Holmgren, JL Reveal. Intermountain Flora, vol 1. (New York, NY: Hafner Publishing, 1977).

Davidson DE, WD Newmark, JW Sites, DK Shiozawa, EA Rickart, KT Harper, and RB Keiter. "Selecting wilderness areas to conserve Utah's biological diversity". Great Basin Naturalist, vol. 56, (1996) pp. 95-118.

Davis, G. D. " Preservation of natural diversity: the role of ecosystem representation in wilderness." (Tampa, FL: Paper presented at the National Wilderness Colloquium, 1988)

Deacon, J.E. and Minckley, W.L. "Desert fishes." in Brown, G.W. ed. Desert biology, vol II. (New York, NY: Academic Press, 1974). pp. 385-488.

- Diamond, J.M. "'Normal' extinctions of isolated populations". in M.H. Nitecki, ed. Extinctions. (Chicago, IL: University of Chicago Press, 1981). pp. 191-246.
- Dott, C.E. Disturbance and plant communities in a dynamic landscape: canyons of southeastern Utah. (Madison, WI: Unpublished PhD dissertation, University of Wisconsin, 1996).
- Dregne, H.E. "Desertification of arid lands." in Dregne, H.E., ed. Advances in desert and arid land technologies and development, vol. 3. (Chur, Switzerland: Harwood Academic Publisher, 1993).
- Evans, R.D. and J.R. Ehleringer. "A break in the nitrogen cycle in aridlands? Evidence from $\delta^{15}N$ of soils." Oecologia, vol. 94, (1993) pp. 314-317.
- Fahrig, L., and G. Merriam. "Habitat connectivity and survival." Ecology, vol. 66, (1985) pp. 1762-1768.
- Fleischner, T. "Ecological costs of livestock grazing in North America." Conservation Biology, vol. 8, (1994) pp. 629-644.
- Forcella, F. and S.J. Harvey. 1983. "Eurasian weed infestation in western Montana in relation to vegetation and disturbance." Madrono, vol. 30, (1983) pp. 102-109.
- Foreman, D., and H. Wolke. The big outside. (Tucson, AZ: Ned Ludd Books, 1989).
- Fowler, J.F., Stanton, N.L., Hartmann, R.L., and May, C.L. in Van Riper, C. Proceedings of the Second Biennial Conference on Research in Colorado Plateau National Parks. (NPS/NRNAU/NRTP-95/11. USDI-NPS, 1995.)
- Frankel, O.H. and M.E. Soule. Conservation and evolution. (Cambridge, UK: Cambridge University Press, 1981).
- Gaud, William, ed. Supplemental Environmental Studies of the Kaiparowits Generating Station (Flagstaff, AZ: Northern Arizona University Biology Department, report issued July 1, 1974).
- Graff, J. Fluvial processes in dryland rivers. (New York, NY: Springer-Verlag, 1988).
- Gross, K.L. "Mechanisms of colonization and species persistence in plant communities." in Jordan, W.R. and Gilpin, M.E., eds. Restoration ecology. (Cambridge, UK: Cambridge University Press, 1987).

Grumbine, R.L. "What is ecosystem management?" Conservation Biology, vol. 8 (1994) pp. 27-38.

Harper K.T. and Marble, J.R. "A role for nonvascular plants in management of arid and semiarid rangelands." in PT Tueller, ed, Vegetation science applications for rangeland analysis and management. (Dordrecht: Kluwer Academic Publisher, 1988). pp. 135-169.

Harper, K.T., St. Clair, L., Thorne, K.H., and Hess, W.H. Natural History of the Colorado Plateau and the Great Basin. (Niwot, CO: University Press of Colorado, 1994).

Harris, L.D. The fragmented forest: island biogeography theory and the preservation of biotic diversity. (Chicago, IL: University of Chicago Press, 1984).

Harris, L. D., and P. B. Gallagher. "New initiatives for wildlife conservation: the need for movement corridors." in G. MacKintosh, ed. Preserving communities and corridors. (Washington, D.C., Defenders of Wildlife, 1989) pp. 11-34.

Heaney, L.R. 1984. "Mammalian species richness on islands on the Sunda Shelf, Southeast Asia." Oecologia, vol. 61, (1984) pp. 11-17.

Henderson, M. T., G. Merriam, and J. Wegner. "Patchy environments and species survival: chipmunks in an agricultural setting." Biological Conservation, vol. 31, (1985) pp. 95-105.

Holden, P.B., R.A. Stone, W. White, G. Somerville, D. Duff, R. Gervais, and S. Gloss. 1974. "Threatened fishes of Utah". Proceedings of the Utah Academy of Science, Arts and Letters, vol. 51, (1974) pp. 46-65.

Hunter, R. 1990. "Recent increases in Bromus on the Nevada Test Site." in ED McArthur, EM Romney, SD. Smith and PT Tueller, eds, Proceedings: Symposium on cheatgrass invasion, shrub die-off, and other aspects of shrub biology and Management. (Ogden, UT: USDA USFS Technical Report INT-GTR-276). pp. 22-25

Jeffries, Douglas. The Vegetation, Soil, and Cryptogamic Crusts of Blackbrush Communities in the Kaiparowits Basin (Phoenix: Arizona State University, 1989) Ph.D. dissertation, 1989.

IUCN. Categories, objectives and criteria for protected areas. (Morges, Switzerland: 1978).

Iverson, R.M., B.S. Hinckley, R.M. Webb, B. Hallert. "Physical effects of vehicular disturbance on arid landscapes."

Science, vol. 212, (1981) pp. 915-917.

Johansen, JR. "Cryptogamic crusts of semiarid and arid lands of North America." Journal of Phycology, vol. 29, (1993) pp. 140-147.

Johnson, W. C., and C. S. Adkisson. "Dispersal of beech nuts by blue jays in fragmented landscapes." American Midland Naturalist, vol. 113, (1985) pp. 319-324.

Kershner, J. L. "Bonneville cutthroat trout." in M. K. Young, ed. Conservation assessment for inland cutthroat trout. (Ft. Collins, CO: Technical Report RM-GTR-256, USDA Forest Service, 1995) pp. 28-35.

Kleiner, EF and KT Harper. "Environmental and community organization in grasslands of Canyonlands National Park." Ecology, vol. 53, (1972) pp. 299-309.

Knopf, FL. "Significance of riparian vegetation to breeding birds across an altitudinal cline." in Riparian ecosystems and their management: reconciling conflicting uses. (Ft. Collins, CO: USDA USFS Technical Report RM-GTR-120, 1985). pp. 105-111.

Kushlan, JA. "Design and management of continental wildlife reserves: lessons from the Everglades." Biological Conservation, vol. 13, (1979) pp. 281-290.

Larsen, K.D. Effects of microbiotic crusts on the germination and establishment of three range grasses. Unpublished thesis. Boise State University, Boise, ID. 1996.

Levins, R. "Extinctions." in M. Gerstenhaber, ed. Some mathematical questions in biology. Lectures on mathematics in the life sciences. Vol. 2. (Providence, RI: American Mathematical Society) pp. 77-107.

Lomolino, MV and R Channell. "Splendid isolation: Patterns of the geographic range collapse in endangered mammals." Journal of Mammalogy, vol. 76, (1995) pp. 335-347.

Loope, LL, PG Sanchez, PW Tarr, WL Loope, and RL Anderson. "Biological invasions of arid land nature reserves." Biological Conservation, vol. 44, (1988) pp. 95-118.

Loope, WL. Relationship of vegetation to the environment in Canyonlands National Park. (Logan, UT: Unpublished PhD dissertation, Utah State University, 1977).

Ludwig, JA and WG Whitford. "Short-term water and energy flow in arid ecosystems." in Goodall, D.W. and RA Perry, eds, Aridland ecosystems, International Biome Programme Publications #17, (Cambridge, MA: Cambridge University Press, 1981).

Mack, RN and JN Thompson. "Evolution in steppe with few large, hooved mammals." American Naturalist vol. 119 (1978) 757-773.

MacKinnon, J, K MacKinnon, G Child and J Thorsell. Managing protected areas in the tropics. (Gland, Switzerland.: IUCN, 1986).

MacMahon, JA. "Disturbed lands and ecological theory." in WR Jordan and ME Gilpin, eds, Restoration ecology. (Cambridge, UK: Cambridge University Press, 1987).

Mader, HJ. 1984. "Animal habitat isolation by roads and agricultural fields." Biological Conservation. vol. 29, pp. 81-96.

Mader, H. J., C. Schell, and P. Kornacker. "Linear barriers to movements in the landscape." Biological Conservation. vol. 54, (1990) pp. 209-222.

May, CL, JF Fowler, and NL Stanton. in Van Riper, C III, Proceedings of the Second Biennial Conference on Research in Colorado Plateau National Parks. (NPS/NRNAU/NRTP-95/11. USDI-NPS. 1995).

Meffe, GK and CR Carroll. . Principles of conservation biology. (Sunderland, MA: Sinauer, 1994).

Michener, CD. 1979. "Biogeography of the bees." Annals of the Missouri Botanical Garden. vol. 66, (1979) pp. 277-347.

Miller, RR. "Origin and affinities of the freshwater fish fauna of western North America." in CL Hubbs, ed., Zoogeography. (AAAS Publication 51, 1959) pp 187-222.

Miller, RR. 1961. "Man and the changing fish fauna of the American Southwest". Papers, Michigan Academy of Science, Arts and Letters. vol. 46, (1961) pp. 365-404.

Minkley, WL and JE Deacon. "Southwestern fishes and the enigma of 'endangered species'." Science. vol. 159, (1968) pp. 1424-1432.

- Minckley, WL and JE Deacon. Battles against extinction: native fish management in the American West. (Tucson, AZ: University of Arizona Press, 1990).
- Minckley, WL, DA Henderson, and CE Bond. "Geography of western North American freshwater fishes: description and relationships to intracontinental tectonism." in CH Hocutt and EO Wiley, eds., The zoogeography of North American freshwater fishes. (New York, NY: John Wiley and Sons, 1986). pp. 519-613.
- Moldenke, A. Soil microarthropods of Virginia and Chesler Parks, Canyonlands National Park, UT. Final report, National Park Service. Moab, UT. 1995.
- Monsen, SB and SG Kitchen, eds. Proceedings: Ecology and Management of Annual Rangelands. (Ogden, UT: USDA INT-GTR-313, 1994). pp. 179-185.
- Murdoch, Joseph, et al. Navajo-Kaiparowits Environmental Baseline Studies Summary Report 1971-1974 (Provo, UT: Center for Health and Environmental Studies; Botany and Range Science Department of Brigham Young University, 1974).
- Nabhan, GP and C Wilson. Canyons of Color. (New York, NY: Harper Collins, 1996).
- Neff, JL and BB Simpson. "Bees, pollination systems and plant diversity." Pages 143-167 in J. LaSalle and IE Gauld, eds. Hymenoptera and biodiversity. (Wallingford, UK: C.A.B. International, 1993).
- Newmark, WD. "Legal and biotic boundaries of western North American national parks: a problem of congruence." Biological Conservation. vol. 33, (1985) pp. 197-206.
- Newmark, WD. 1987. "A land-bridge island perspective on mammalian extinction in western North American parks." Nature. vol. 325, (1987) pp. 430-432.
- Newmark, WD. 1995. "Extinction of mammal populations in western North American national parks." Conservation Biology. vol. 9, (1995) pp. 512-526.
- Noss, RF. "The wildlands project: land conservation strategy." in The wildlands project. Wild Earth Special Issue. (Cenozoic Society, 1992) pp 10-25.
- Noss, R. F. "What can wilderness do for biodiversity?" in P. Reed, ed. Preparing to manage wilderness in the

21st century. (Asheville, NC. GTR SE-66. USDA Forest Service. Southeastern Forest Experiment Station, 1990) pp. 49-69.

Noss, R. F. " Landscape connectivity: different functions at different scales." in W. E. Hudson, ed. Landscape linkages and biodiversity. (Washington, DC: Defenders of Wildlife, 1991) pp. 27-39.

Noss, R. F. "Wildlife corridors." in D. Smith and P. Hellmund, eds. Ecology of greenways. (Minneapolis, MN: University of Minnesota Press, 1993) pp. 43-68.

Noss, R. F., and A. Y. Cooperrider. Saving nature's legacy. (Washington, DC: Island Press, 1994).

Osley, DJ, MB Fenton, and GR Carmody. "The effects of roads on populations of small mammals." Journal of Applied Ecology. vol. 11, (1974) pp. 51-59.

Patterson, BD. "Mammalian extinction and biogeography in the southern Rocky Mountains." in MH Nitecki, ed. Extinctions, (Chicago, IL: University of Chicago Press, 1984) pp. 247-293 .

Pellant, M and C Hall. "Distribution of two exotic grasses on intermountain rangelands." in SB Monsen and SG Kitchen, eds. Proceedings: Ecology and Management of Annual Rangelands. (Ogden, UT: USDA INT-GTR-313, 1994). pp. 109-112.

Pickett, STA and JN Thompson. "Patch dynamics and the design of nature reserves." Biological Conservation. vol. 13, (1978) pp. 27-37.

Pickett, STA and PA White. The ecology of natural disturbance and patch dynamics. (Orlando, FL: Academic Press, 1985).

Pimm, SL. " Community structure and stability." in ME Soule, ed. Conservation Biology: the science of scarcity and diversity. (Sunderland, MA: Sinauer Press, 1986).

Primack, RB. Essentials of conservation biology. (Sunderland, MA: Sinauer, 1993).

Raines, James. Modeling Studies of Small Mammal Trapping, Phenology, and Plant Succession in the Kaiparowits Region, Kane County, Utah (Provo: Brigham Young University, 1985, 1976); Ph.D. Dissertation, 1976.

Raven, PR. The nature and value of biodiversity, in Global biodiversity strategy: guidelines for action to save, study and use earth's biotic wealth sustainably and equitably. (WRI, IUCN, UNEP, 1992). pp. 1-18.

Reice, SR. "Non-equilibrium determinants of biological community structure." American Scientist. vol. 82, (1994) pp. 424-435.

Roberts, L. "A dynamical systems perspective on vegetation theory." Vegetation. vol. 69, (1987) pp. 27-33.

Rogers, GF. Then and Now. (Salt Lake City, UT: University of Utah Press, 1982).

Rosenweig, ML. 1987. "Restoration ecology: a tool to study population interactions?" in WR Jordan and ME Gilpin, eds. Restoration ecology. (Cambridge, UK: Cambridge University Press, 1987).

Rost, GR and JA Bailey. "Distribution of mule deer and elk in relation to roads". Journal of Wildlife Management. vol. 43, (1979) pp. 634-641.

Salwasser, H, C Schonewald-Cox, and R Baker. "The role of interagency cooperation in managing viable populations." in ME Soule, Viable populations for conservation. Cambridge, UK: Cambridge University Press, 1987) pp. 159-173.

Saunders, DA, RJ Hobbs, and CR Margules. 1991. "Biological consequences of ecosystem fragmentation: a review." Conservation Biology. vol. 5, (1991) pp. 18-32.

Schonewald-Cox, CM. "Guidelines to management: a beginning attempt." in Schonewald-Cox, SM Chambers, B MacBryde, and L Thomas, eds., Genetics and conservation. (Menlo Park, CA: Benjamin Cummings, 1983) pp. 414-445.

Shaffer, ML. "Minimum population size for species conservation." BioScience. vol. 31, (1981) pp. 131-134.

Shreve, F. 1942. "The desert vegetation of North America." Botanical Reviews. vol. 8, (1942) pp. 195-246.

Shulz, L. M. 1993. "Patterns of endemism in the Utah flora." in R. Svirsky and K. Lightfoot, eds. Southwestern rare and endangered plants. (Santa Fe, NM: NM Department of Forestry and Resources Conservation Division. Miscellaneous Publication No. 2, 1993) pp. 249-263.

- Simberloff, D., and J. Cox. "Consequences and costs of conservation corridors." Conservation Biology, vol. 1) pp. 63-71.
- Simberloff, D., J. A. Farr, J. Cox, and D. W. Mehlman. "Movement corridors: conservation bargains or poor investments?" Conservation Biology, vol. 6, (1992) pp. 493-504.
- Soule, ME, ed. Viable populations for conservation. (Cambridge, UK: Cambridge University Press, 1987).
- Soule, ME and BA Wilcox. Conservation biology: an evolutionary-ecological perspective. (Sunderland, MA: Sinauer, 1980).
- Stebbins, GL. "Aridity as a stimulus to plant evolution." American Naturalist, vol. 86, (1952) pp. 33-44.
- Stevens GC. "The elevational gradient in altitudinal range: an extension of Rapoport's latitudinal rule to altitude." American Naturalist, vol. 140, (1992) pp. 893-911.
- Terborgh, J and B Winter. "Some cases of extinction." in ME Soule and BA Wilcox, ed., Conservation biology. (Sunderland, MA: Sinauer, 1980) pp. 119-134.
- Tuhy, Joel and MacMahon, James. Vegetation and Relict Communities of Glen Canyon National Recreation Area (Logan, UT: Utah State University, final report for contract CX1200-6-B076, 1988).
- Turner, MG, WH Romme, RH Gardner, RV O'Neill, TK Kratz. "A revised concept of landscape equilibrium: disturbance and stability on scaled landscapes." Landscape Ecology, vol. 8, (1993) pp. 213-227.
- Utah Natural Heritage Program. Vascular Plant Database. (Salt Lake City, UT: Unpublished, Utah Division of Wildlife Resources).
- Van Devender, AR and WG Spaulding. "Development of vegetation and climate in the Southwestern United States." Science, vol. 204, (1979) pp.701-710.
- Van Dyke, FG, RH Brocke, HG Shaw, BB Ackerman, TP Hemker, and FG Lindzey. "Reactions of mountain lions to logging and human activity." Journal of Wildlife Management, vol. 50, (1986) pp. 95-102.
- Van Pelt, Nicholas and Tuhy, Joel. "Relict Vegetation Sites: Urgent Inventory Need for Desert Parks." Park

Science, vol. 11, no. 3 (Summer 1991) p. 20.

Van Riper, C III. Proceedings of the Second Biennial Conference on Research in Colorado Plateau National Parks. (NPS/NRNAU/NRTP-95/11. USDI-NPS, 1995).

Wagner, FH. "Population dynamics." in Goodall, D.W. and RA Perry, eds, Aridland ecosystems, (Cambridge, MA: International Bionics Programme Publications #17, Cambridge University Press, 1981).

Warren, M. L., and B. M. Burr. "Status of freshwater fishes of the United States: overview of an imperiled fauna." Fisheries. vol. 19, (1994) pp. 6-18.

Webb, RH and HG Wiltshire. Environmental effects of off-road vehicles: impacts and management in arid regions. (New York, NY: Springer-Verlag, 1981).

Wegner, J. F., and G. Merriam. "Movements of birds and small mammals between a wood and adjoining farmland." Journal of Applied Ecology. vol. 16, (1979) pp. 349-357.

Welsh, SL. "Endangered and threatened plants of Utah, a reevaluation." Great Basin Naturalist. vol. 38, no. 1 (March 31, 1978) pp. 1-18.

Welsh, SL, ND Atwood, JL Reveal. "Endangered, threatened, extinct, endemic and rare or restricted Utah vascular plants." Great Basin Naturalist. vol. 35, (1975) pp. 326-327.

Welsh, Stanley. Flowers of the Canyon Country (Salt Lake City: University of Utah Press, 3d edition, 1986).

Welsh, SL, ND Atwood, LC Higgins, and S Goodrich. "A Utah Flora." Great Basin Naturalist Memoirs. vol. 9, (Provo, UT: Brigham Young University, 1987).

Welsh, Stanley. Environmental Baseline Studies of the Navajo-Kaiparowits Generating Stations (Provo, UT: Brigham Young University, 1973).

Welsh, Stanley. "Kaiparowits Flora." Great Basin Naturalist, vol. 38, no. 2 (1978) pp. 125-179.

Welsh, Stanley, et al. A Survey of Natural Landmark Areas of the North Portion of the Colorado Plateau--Biologic and Geologic Themes (Provo, UT: Brigham Young University, 1980).

Wiens, J. A. The ecology of bird communities. Vol 2, (New York, NY: Cambridge University Press, 1989).

Wilcove, DS, CH McLellan, and AP Dobson. "Habitat fragmentation in the temperate zone." pp. 237-256 in ME Soule, ed. Conservation biology: the science of scarcity and diversity. (Sunderland, MA: Sinauer, 1986).

Wilcox, BA and DD Murphy. "Conservation strategy: the effects of fragmentation on extinction." American Naturalist. vol. 125, (1985) pp. 879-887.

Williams, JD, JP Dobrowolski, NE West and DA Gillette. "Microphytic crust influence on wind erosion." Transactions of the American Society of Agricultural Engineers. vol. 38, (1995) pp. 131-137.

Willis, EO. "Populations and local extinctions of birds on Barro Colorado Island, Panama." Ecological Monographs. vol. 44, (1974) pp. 153-169.

Witmer, GW and DS Calesta. "Effect of forest roads on habitat use by Roosevelt elk." Northwest Science. vol. 59, (1985) pp. 122-125.

Young, JA, RA Evans and BL Kay. "Cheatgrass." Rangelands. vol. 9, (1987) pp. 266-270.

Zanaboni, A. and Lorenzoni, G.. "The Importance of Hedges and Relict Vegetation in Agroecosystems and Environment Reconstruction." Agriculture Ecosystems & Environment. vol. 27, nos. 1-4 (special issue) (November, 1989).

VI. General resources (These sources describe resources that cover several disciplines within the area.)

Abbey, Ed. "Escalante Canyon." in Meyer, Alfred, ed. Encountering the Environment (New York: Van Nostrand Reinhold, 1971).

Barnes, F.A. Utah Canyon Country. (Salt Lake City, UT: Utah Geographic Series, Inc. 1986).

Crampton, C. Gregory. Standing Up Country: The Canyonlands of Utah and Arizona (New York: A.A. Knopf, 1964; Layton, UT: Peregrine Smith, 1983).

Daughters of Utah Pioneers. Utah Rivers, Part 2 (Salt Lake City: The Daughters of Utah Pioneers, 1986)

Frankel, Zachary. A Citizen's Proposal to Protect the Wild Rivers of Utah, Southern Utah Wilderness Alliance, Salt Lake City, Utah. 1994

Kelsey, Michael. Hiking and Exploring the Paria River, Including the Story of John D. Lee and the Mountain Meadows Massacre (Provo, UT: Kelsey Publishers, 1991).

Lambrechtse, Rudi. Hiking the Escalante (Salt Lake City: Wasatch Publishers, 1985).

Millar, Rodney and Degiorgio, Joan. The Colorado Plateau: A Proposed Thematic World Heritage List Nomination. Unpublished, submitted to the Federal Interagency Panel for World Heritage, National Park Service by the State of Utah, June, 1986.

Phillips, John. "Nowhere Man". Car and Driver. Vol. 42, No. 1. (July 1996) pp. 109-121.

Powell, John Wesley. Report on the Lands of the Arid Region of the United States (Boston: The Harvard Common Press, 1879, 1983).

Powell, John Wesley. The Exploration of the Colorado River and Its Canyons (originally published by Flood & Vincent under the title Canyons of the Colorado, reprint, New York: Dover Publications, 1961)

Richarson, Elmo R.. 1965, "Federal park policy in Utah: the Escalante National Monument controversy of 1935-1940." Utah State Historical Quarterly, vol. 33, no. 2, p. 109-133.

Utah Wilderness Coalition. Wilderness at the Edge (Salt Lake City: Utah Wilderness Coalition, 1990; distributed by Peregrine Smith Books).

U.S. Department of the Interior, Bureau of Land Management. BLM Intensive Wilderness Inventory: Final Decision. 1980

U.S. Department of the Interior, Bureau of Land Management. Escalante/Kanab Resource Management Plan: Grand Staircase Ecosystem Analysis. (Cedar City, UT: Cedar City District, 1994).

U.S. Department of the Interior, Bureau of Land Management. Draft Sensitive Resources: Escalante/Kanab RMP. (Cedar City, UT: Cedar City District, 1994).

- U.S. Department of the Interior, Bureau of Land Management. Utah Statewide Wilderness Environmental Impact Statement, Final. 1990.
- U. S. Department of the Interior, Bureau of Land Management. Utah Statewide Wilderness Study Report, Vol IIA - Summary Analysis of Study Area Recommendations. 1991.
- U.S. Department of the Interior, Bureau of Land Management. Kanab/Escalante Grazing Management Environmental Impact Statement, Draft. 1980.
- U.S. Department of the Interior, Bureau of Land Management. Kaiparowits Project Environmental Impact Statement. 1976.
- U.S. Department of the Interior, Bureau of Land Management. Kaiparowits Coal Development and Transportation Study, Final Report. 1980.
- U.S. Department of the Interior, Bureau of Land Management and Office of Surface Mining Reclamation and Enforcement. Preliminary Draft Environmental Impact Statement: Proposed Development and Operation of the Warm Springs Project. 1995.
- Wahlquist, Wayne. ed. Atlas of Utah. (Provo, UT: Brigham Young University Press; Weber State College, 1981).
- Wels, S.L., Rigby, J.K., Hamblin, W.K.. A Survey of Natural Landmark Areas of the North Portion of the Colorado Plateau: Biotic and Geologic Themes. Brigham Young University, Provo. 1980.

MONUMENTS ESTABLISHED BY PRESIDENTIAL PROCLAMATION

Exhibit -- D

Monument	Specific Object(s)	Categorical Object(s)	Initial Reservation	Subsequent History, Current Status	President
1. Devil's Tower, WY. Proc. No. 658 (Sept. 24, 1906), Stat. 3236	"lofty and isolated rock ... such an extraordinary example of the effect of wind erosion in the higher mountains as to be a natural wonder and an object of historic and scientific interest" (Proc. No. 658)	"natural wonder and an object of historic and scientific interest" (Proc. No. 658)	1,193.91 acres	Boundary enlarged by Act of August 9, 1955, 69 Stat. 575. Now a National Monument (NM) of 1346.91 acres.	T. Roosevelt
2. El Morro, NM. Proc. No. 695 (Dec. 8, 1906), 34 Stat. 3264	"the rocks known as El Morro and Inscription Rock ... of greatest historical value" (Proc. No. 695)	"greatest historical value" (Proc. No. 695); "ruins of archaeological value" (Proc. No. 1377)	160 acres	Boundary enlarged by Proc. No. 1377 (June 18, 1917), 40 Stat. 1673; Act of June 14, 1950, 64 Stat. 211. Now a NM of 1039.92 acres.	T. Roosevelt
3. Montezuma Castle, AZ. Proc. No. 696 (Dec. 8, 1906), 34 Stat. 3265	"prehistoric object know as Montezuma's Castle ... of the greatest ethnological value and scientific interest" (Proc. No. 696); "prehistoric ruins and ancient cliff dwellings ... of great interest to the public" (Proc. No. 2226)	"greatest ethnological and scientific interest" (Proc. No. 696).	161.39 acres	Boundary enlarged by Proc. No. 2226 (Feb. 23, 1937), 50 Stat. 1817; Act of Oct. 19, 1943, 57 Stat. 572 (adding a "detached unit"); Act of June 23, 1959, 73 Stat. 108; Act of Nov. 10, 1978, 92 Stat. 3474. Now a NM of 840.86 acres.	T. Roosevelt, F.D. Roosevelt
4. Petrified Forest, AZ. Proc. No. 697 (Dec. 8, 1906), 34 Stat. 3266	"mineralized remains of Mesozoic forests" (Proc. No. 697)	"greatest scientific interest and value" (Proc. No. 697); "additional features of scenic and scientific interest" (Proc. Nos. 1927, 1975, 2011).	60,776.02 acres	Boundary reduced by Proc. No. 1167 (July 31, 1911), 37 Stat. 1716; boundary enlarged by Proc. No. 1927 (Nov. 14, 1930), 46 Stat. 3040; Proc. No. 1975 (Nov. 30, 1931), 47 Stat. 2486; Proc. No. 2011 (Sept. 23, 1932), 47 Stat. 2532; Act of March	T. Roosevelt, Wm. H. Taft, Herbert Hoover

Acreage figures are estimated federal acreage where available, but may in some cases be total acreage.

Monument	Specific Object(s)	Categorical Object(s)	Initial Reservation	Subsequent History/ Current Status	President
				28, 1958, 72 Stat. 69. Now National Park of 93,492.57 acres; Act of March 28, 1958, 72 Stat. 69 (codified at 16 U.S.C. § 119), Park established Dec. 9, 1962 (wilderness designated, Act of October 23, 1970, 84 Stat. 1105).	
5. Chaco Canyon, NM. Proc. No. 740 (March 11, 1907), 35 Stat. 2119	"extensive prehistoric communal or pueblo ruins ... of extraordinary interest because of their number and their great size and because of the innumerable and valuable relics of a prehistoric people which they contain" (Proc. No. 740)		10,643.13 acres	Boundary enlarged by Proc. No. 1826 (Jan. 10, 1928), 45 Stat. 2937. Redesignated and renamed Chaco Culture National Historic Park (NHP) by the Act of Dec. 19, 1980, 94 Stat. 3221, 3227. Now a NHP of 31,084.74 acres.	T. Roosevelt, Calvin Coolidge
6. Cinder Cone, CA. Proc. No. 753 (May 6, 1907), 35 Stat. 2131	"the elevation ... known as Cinder Cone, and the adjacent area embracing a lava field and Snag Lake and Lake Bidwell ... of great scientific interest, as illustrations of volcanic activity which are of special importance in tracing the history of the volcanic phenomena of that vicinity" (Proc. No. 1907)	"great scientific interest" (Proc. No. 1970)	5,120.00 acres	Now Lassen Volcanic NP, 106,366.70 acres; Act of Aug. 9, 1916, 39 Stat. 442 (codified at 16 U.S.C. §§ 201 et seq.) (several boundary changes; wilderness designated, Act of Oct. 19, 1972, 86 Stat. 918).	T. Roosevelt
7. Lassen Peak, CA. Proc. No. 754 (May 6,	"Lassen Peak ... marks the southern terminus of the long		1,280.00 acres	Now Lassen Volcanic NP, 106,366.70 acres; Act of Aug. 9, 1916, 39 Stat.	T. Roosevelt

Acreage figures are estimated federal acreage where available, but may in some cases be total acreage.

Monument	Specific Object(s)	Categorical Object(s)	Initial Reservation	Subsequent History/ Current Status	President
1907), 35 Stat. 2132	line of extinct volcanoes in the Cascade Range from which one of the greatest volcanic fields in the world extends, and is of special importance in tracing the history of the volcanic phenomena of that vicinity" (Proc. No. 754)			442 (codified at 16 U.S.C. §§ 201 <i>et seq.</i>) (several boundary changes; wilderness designated, Act of Oct. 19, 1972, 86 Stat. 918).	
8. Gila Cliff Dwellings, NM. Proc. No. 781 (Nov. 16, 1907), 35 Stat. 2162	"group of cliff-dwellings ... of exceptional scientific and educational interest, being the best representative of the Cliff-Dwellers' remains of that region" (Proc. No. 781); "additional cliff-dwellings and pit-house sites ... needed to round out the interpretive story" (Proc. No. 3467)	"exceptional scientific and educational interest" (Proc. No. 781)	160.00	Transferred from NFS to NPS, Aug. 10, 1933; boundary increase -Proc. No. 3467 (April 17, 1962), 76 Stat. 1465; NFS resumed administration, April 28, 1975. Now a NM of 533.13 acres.	T. Roosevelt, John F. Kennedy
9. Tonto, AZ. Proc. No. 787 (Dec. 19, 1907), 35 Stat. 2168	"two prehistoric ruins of ancient cliff dwellings ... of great ethnologic, scientific and educational interest" (Proc. No. 787)	"great ethnologic, scientific and educational interest" (Proc. No. 787)	640 acres	Transferred from NFS to NPS, Aug. 10, 1933; boundary increased by Proc. No. 2230 (April 1, 1937), 50 Stat. 1825. Now NM of 1120.00 acres.	T. Roosevelt, F.D. Roosevelt
10. Muir Woods, CA. Proc. No. 793 (Jan. 9, 1908), 35 Stat. 2174	"an extensive growth of redwood trees (<i>Sequoia sempervirens</i>) ... of extraordinary scientific interest	"extraordinary scientific interest and importance" (Proc. No. 793)	295 acres	Boundary enlarged by Proc. No. 1608 (Sept. 22, 1921), 42 Stat. 2249; Proc. No. 2122 (April 5, 1935), 49 Stat. 343; Proc. No. 2932 (June 26, 1951),	T. Roosevelt

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Monument	Specific Object(s)	Categorical Object(s)	Initial Reservation	Subsequent History/ Current Status	President
	and importance because of the primeval character of the forest in which it is located, and of the character, age and size of the trees" (Proc. No. 793)			65 Stat. c20; Proc. No. 3311 (Sept. 8, 1959), 73 Stat. c76; Act of April 11, 1972, 86 Stat. 120. Now NM of 522.98 acres.	
11. Grand Canyon "I," AZ. Proc. No. 794 (Jan. 11, 1908), 35 Stat. 2175	"an object of unusual scientific interest, being the greatest eroded canyon within the United States" (Proc. No. 794)	"an object of unusual scientific interest" (Proc. No. 794)	808,120 acres	Now part of Grand Canyon NP, 1,180,617.78 acres; Act of Feb. 26, 1919, 40 Stat. 1175 (codified at 16 U.S.C. §§ 221 et seq.) (subsequent boundary changes; establishment of Grand Canyon "II" NM, Proc. No. 2022 (Dec. 22, 1932), 47 Stat. 2547; Marble Canyon NM, Proc. No. 3889 (Jan. 20, 1969), 83 Stat. 924; Grand Canyon NP, Act of Jan. 3, 1975, 33 Stat. 2089, incorporating original Grand Canyon NP, Grand Canyon "II" NM, Marble Canyon NM, and portions of Glen Canyon and Lake Mead National Recreation Areas).	T. Roosevelt
12. Pinnacles, CA. Proc. No. 796 (Jan. 16, 1908), 35 Stat. 2177	"the natural formations known as the Pinnacles Rocks, with a series of caves underlying them ... of scientific interest" (Proc. No. 796)	"natural formations ... of scientific interest"; "additional features of scientific and educational interest" (Proc. No. 796)	1,320.00 acres	Boundary enlarged by Proc. No. 1660 (May 7, 1923), 43 Stat. 1911; Proc. No. 1704 (July 2, 1924), 43 Stat. 1961; Proc. No. 1948 (April 13, 1931), 47 Stat. 2451; Proc. No. 2050 (July 11, 1933), 48 Stat. 1701; Proc. No. 2528 (Dec. 5, 1941), 55 Stat. 1709; Act of Oct. 20, 1976, 90 Stat.	T. Roosevelt, Warren G. Harding, Calvin Coolidge, Herbert Hoover, F.D. Roosevelt

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Monument	Specific Object(s)	Categorical Object(s)	Initial Reservation	Subsequent History/ Current Status	President
13. Jewel Cave, SD. Proc. No. 799 (Feb. 7, 1908), 35 Stat. 2180	"the natural formation, known as the Jewel Cave ... of scientific interest" (Proc. No. 799); "significant caverns and other geological features" (Act of Oct. 9, 1965)	"natural formation ... of scientific interest" (Proc. No. 799); "geological features" (Act of Oct. 9, 1965)	1,274.56 acres	2692; wilderness designated, Act of Oct. 20, 1976, 90 Stat. 2692. Now NM of 16,254.62 acres. Transferred from NFS to NPS, Aug. 10, 1933; boundary enlarged by the Act of Oct. 9, 1965, 79 stat. 971. Now NM of 1274.56 acres.	T. Roosevelt
14. Natural Bridges, UT. Proc. No. 804 (April 16, 1908), 35 Stat. 2183	"a number of natural bridges ... having heights more lofty and spans far greater than any heretofore known to exist ... of the greatest scientific interest ... extraordinary examples of stream erosion" (Proc. No. 804); "prehistoric cave springs" (Proc. No. 881); "additional cliff-type prehistoric Indian ruins" (Proc. No. 3486)	"greatest scientific interest" (Proc. No. 804)	120.00 acres	Boundary enlarged - Proc. No. 881 (Sept. 25, 1909), 36 Stat. 2502; Proc. No. 1323 (Feb. 11, 1916), 39 Stat. 1764; Proc. No. 3486 (Aug. 14, 1962), 76 Stat. 1495. Now NM of 7,636.49 acres.	T. Roosevelt, Wm. H. Taft, Woodrow Wilson, John F. Kennedy
15. Lewis & Clark, MT Proc. No. 807 (May 11, 1908), 35 Stat. 2187.	"an extraordinary limestone cavern ... of great scientific interest" (Proc. No. 807).		160 acres	Location confirmed - Proc. No. 1123 (May 16, 1911), 37 Stat. 1679. Now abolished by Act of Aug. 24, 1937, 50 Stat. 746 (property to be transferred to state).	T. Roosevelt, Wm. H. Taft
16. Tumacacori, AZ.	"the Tumacacori Mission, an	"great historical interest"	10.00 acres	Boundary enlarged - Proc. No. 3228	T. Roosevelt

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Monument	Specific Object(s)	Categorical Object(s)	Initial Reservation	Subsequent History/ Current Status	President
Proc. No. 821 (Sept. 15, 1908), 35 Stat. 2205.	ancient Spanish ruin, which is one of the oldest mission ruins in the Southwest ... and in remarkable repair, considering its great age, and of great historical interest" (Proc. No. 821)	(Proc. No. 821)		(March 28, 1958), 72 Stat. c30; Act of Nov. 10, 1978, 92 Stat. 3475. Redesignated Tumacacori NHP by Pub. L. 101-344, 104 Stat. 393, codified at 16 U.S.C. §§ 410ss and 410ss note. Now an NHP of 15.88 acres.	
17. Wheeler, CO. Proc. No. 831 (Dec. 7, 1908), 35 Stat. 2214.	"certain volcanic formations ... of unusual scientific interest as illustrating erratic erosion" (Proc. No. 831)	"unusual scientific interest" (Proc. No. 831)	300.00 acres	Abolished by Act of Aug. 3, 1950, 64 Stat. 405 (property to be administered as national forest)	T. Roosevelt
18. Mount Olympus, WA. Proc. No. 869 (March 2, 1909), 35 Stat. 2247.	"the slopes of Mount Olympus and the adjacent summits of the Olympic Mountains... embrace ... numerous glaciers, and ... the summer range and breeding grounds of the Olympic Elk" (<i>Cervus rooseveliti</i>), a species peculiar to these mountains and rapidly decreasing in numbers" (Proc. No. 869)	"certain objects of unusual scientific interest" (Proc. No. 869)	639,200.00 acres	boundary reduced - Proc. No. 1191 (April 17, 1912), 37 Stat. 1737; Proc. No. 1293 (May 11, 1915), 39 Stat. 1726; Proc. No. 1862 (Jan. 7, 1929), 45 Stat. 2984. Transferred from NFS to NPS, Aug. 10, 1933. Now Olympic NP, 913,280.5 acres; Act of June 29, 1938, 52 Stat. 1241 (codified at 16 U.S.C. §§ 251 <u>et seq.</u>) (several subsequent changes).	T. Roosevelt, Wm. H. Taft, Woodrow Wilson, Herbert Hoover
19. Navajo, AZ. Proc. No. 873 (March 20, 1909), 36 Stat. 2491.	"a number of prehistoric cliff dwellings and pueblo ruins ... which are new to science and wholly unexplored, and because of their isolation and size are of the very greatest ethnological,	"very greatest ethnological, scientific and educational interest" (Proc. No. 873)	360.00 acres	Boundary reduced - Proc. No. 1186 (March 14, 1912), 37 Stat. 1733. Now NM of 360.00 acres.	Wm. H. Taft

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Monument	Specific Object(s)	Categorical Object(s)	Initial Reservation	Subsequent History/ Current Status	President
	scientific and educational interest" (Proc. No. 873)				
20. Oregon Caves, OR. Proc. No. 876 (July 12, 1909), 36 Stat. 2497.	"certain natural caves ... of unusual scientific interest and importance" (Proc. No. 876)	"unusual scientific interest" (Proc. No. 876)	465.80 acres	Now NM of 466.23 acres.	Wm. H. Taft
21. Mukuntuweap (Zion), Ut. Proc. No. 877 (July 31, 1909), 36 Stat. 2498.	"Mukuntuweap Canyon... is an extraordinary example of canyon erosion and is of the greatest scientific interest" (Proc. No. 877); "many natural features of unusual archaeological, geologic, and geographic interest ... the archaeological features pertain [sic] to the prehistoric races of America and to the ancestral Indian tribes, ... the geologic features include craters of extinct volcanoes, fossiliferous deposits of unusual nature, and brilliantly colored strata of unique composition, among which are some believed to be the best representatives in the world of a rare type of sedimentation ... the features of geographic interest include a labyrinth of remarkable canyons	"greatest scientific interest" (Proc. No. 877); "natural features of unusual archaeological, geologic, and geographic interest" (Proc. No. 1435)	16,000.00 acres	Name changed and boundary enlarged - Proc. No. 1435 (March 18, 1918), 40 Stat. 1760. Now Natl. Park (Zion NP) - 142,542.05 acres; Act of Nov. 19, 1919, 41 Stat. 356 (several subsequent boundary changes)	Wm. T. Taft, Woodrow Wilson, F.D. Roosevelt

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Monument	Specific Object(s)	Categorical Object(s)	Initial Reservation	Subsequent History/ Current Status	President
	with highly ornate and beautifully colored walls, in which are plainly recorded the geologic events of past ages" (Proc. No. 1435)				
22. Shoshone Cavern, WY. Proc. No. 880 (Sept. 12, 1909), 36 Stat. 2501.	"a cavern...of unknown extent but of many windings and ramifications and containing vaulted chambers of large size, magnificently decorated with sparkling crystals and beautiful stalactites, and containing impenetrable pits of unknown depth" (Proc. No. 880)	"of great scientific interest and value" (Proc. No. 880)	210 acres	Now abolished by Act of May 17, 1954, 68 Stat. 98 (property to be conveyed to city for public park and recreational use with reverter to federal government).	Wm. H. Taft
23. Gran Quivira, NM. Proc. No. 882 (Nov. 1, 1909), 36 Stat. 2503.	"one of the largest and most important of the early Spanish church ruins ... together with numerous Indian pueblo ruins in its vicinity ... of great historical interest"; (Proc. No. 882); "ruins of archaeological value" (Proc. No. 1545)	"great historical interest" (Proc. No. 882); "ruins of archaeological value" (Proc. No. 1545)	183.77 acres	Boundary enlarged - Proc. No. 1545 (Nov. 25, 1919), 41 Stat. 1778. Monument abolished and funds made available to Salinas NM by Pub. L. 96-550, Dec. 19, 1980, 94 Stat. 3231. Salinas NM redesignated Salinas Pueblo Missions NM by Pub. L. 100-559, Oct. 28, 1988, 102 Stat. 2797.	Wm. H. Taft, Woodrow Wilson
24. Sitka, AK. Proc. No. 959 (March 23, 1910), 36 Stat. 2601)	"the decisive battleground of the Russian conquest of Alaska in 1804, and ... the site of the former village of the Kit-Siti tribe, the most warlike of the		51.25 acres	Boundary redefined and enlarged - Proc. No. 2965 (Feb. 25, 1952), 66 Stat. c22. Now Sitka NHP, 106.17 acres; Act of Oct. 18, 1972, 86 Stat. 904.	Wm. H. Taft, Harry S. Truman

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Monument	Specific Object(s)	Categorical Object(s)	Initial Reservation	Subsequent History/ Current Status	President
	Alaskan Indians ... and ... the graves of a Russian midshipman and six sailors, killed in the conflict, and numerous totem poles constructed by the Indians, which record the genealogical history of their several clans" (Proc. No. 959)				
25. Rainbow Bridge, UT. Proc. No. 1043 (May 30, 1910), 36 Stat. 2703.	"an extraordinary natural bridge, having an arch which is in form and appearance much like a rainbow, and which is three hundred and nine feet high and two hundred and seventy-eight feet span ... of great scientific interest as an example of eccentric stream erosion" (Proc. No. 1043)	"great scientific interest" (Proc. No. 1043)	160 acres	now NM of 160.00 acres	Wm. H. Taft
26. Big Hole Battlefield, MT. Exec. Order No. 1216 (June 23, 1910)		"historic landmarks" (Exec. Order No. 1216)	5.00 acres	Transferred from War Department to NPS, Aug. 10, 1933; boundary enlarged - Proc. No. 2239 (June 29, 1939), 53 Stat. 2544; name changed and boundary enlarged, Act of May 17, 1963, 77 Stat. 18. Now Natl. Battlefield (Big Hole NB) - 655.61 acres; Act of May 17, 1963, 77 Stat. 18 (subsequent boundary changes)	Wm. H. Taft, F.D. Roosevelt

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Monument	Specific Object(s)	Categorical Object(s)	Initial Reservation	Subsequent History/ Current Status	President
27. Colorado, CO. Proc. No. 1126 (May 24, 1911), 37 Stat. 1681.	"extraordinary examples of erosion ... of great scientific interest ... natural formations" (Proc. No. 1126)	"great scientific interest ... natural formations" (Proc. No. 1126); "features of historical and scientific interest" (Proc. No. 2037)	13,466.21 acres	Boundary enlarged - Proc. No. 2037 (March 3, 1933), 47 Stat. 2563; boundary revised - Proc. No. 3307 (Aug. 7, 1959), 73 Stat. 69; Oct. 21, 1976). Nov. 10, 1978. Now NM of 19,925.91 acres.	Wm. H. Taft, Herbert Hoover, Dwight D. Eisenhower
28. Devil Postpile, CA. Proc. No. 1166 (July 6, 1911), 37 Stat. 1715.	"the natural formations known as the Devil Postpile and Rainbow Falls ... of scientific interest" (Proc. No. 1166)	"scientific interest" (Proc. No. 1166)	798.46 acres	Transferred from NFS to NPS, Aug. 10, 1933. Now NM of 798.46 acres.	Wm. H. Taft
29. Papago Saguaro, AZ. Proc. No. 1262 (Jan. 31, 1914), 38 Stat. 1991.	"splendid examples of the giant and many other species of cacti and the yucca palm, with many additional forms characteristic of desert flora, grow to great size and perfection and are of great scientific interest, and ... numerous prehistoric pictographs of archaeological and ethnological value" (Proc. No. 1262)	"great scientific interest ... archaeological and ethnological value ... natural objects and prehistoric inscriptions" (Proc. No. 1262)	2,050.43 acres	Boundary reduced - Exec. Order No. 3769 (Dec. 28, 1922). Now abolished by Act of April 7, 1930, 46 Stat. 142 (property to be conveyed to state for park, recreational, and public convenience purposes with reverter to federal government).	Woodrow Wilson, W.G. Harding

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Monument	Specific Object(s)	Categorical Object(s)	Initial Reservation	Subsequent History/ Current Status	President
30. Cabrillo, CA. Proc. No. 1255 (Oct. 14, 1913), 38 Stat. 1965.	"when Cabrillo sailed from San Diego Bay on the 28th day of September, 1542, Point Loma was the first land sighted" (Proc. No. 1255)	"historical landmarks and historical objects" (Proc. No. 32730)	0.50 acres	Proc. No. 1773 (May 12, 1926), 44 Stat. 2612; transferred from War Dept. to NPS, Aug. 10, 1933; boundary enlarged - Proc. No. 3273 (Feb. 2, 1959), Stat. ; Proc. No. 4319 (Sept. 28, 1974), Stat. . Now NM of 137.06 acres. Woodrow Wilson, Dwight D. Eisenhower, Gerald R. Ford	
31. Dinosaur, CO. Proc. No. 1313 (Oct. 4, 1915), 39 Stat. 1752.	"an extraordinary deposit of Dinosaurian and other gigantic reptilian remains of the Juratrias period, which are of great scientific interest and value" (Proc. No. 1313)	"great scientific interest and value" (Proc. No. 1313); "various objects of historic and scientific interest" (Proc. No. 2290)	80.00 acres	Boundary enlarged - Proc. No. 2290 (July 14, 1938), 53 Stat. 2454; Act of Sept. 8, 1960, 74 Stat. 857. Boundaries enlarged by Notice of the Secretary of the Interior, Feb. 21, 1963, March 27, 1964, Notice of the Asst. Secretary of the Interior, Oct. 6, 1964, and Notice of the Dir. of the NPS, Aug. 27, 1985. Now NM of 204,355.49 acres.	Woodrow Wilson, Calvin Coolidge
32. Walnut Canyon, AZ Proc. No. 1318 (Nov. 30, 1915), 39 Stat. 1761.	"certain prehistoric ruins of ancient cliff dwellings ... of great ethnologic, scientific, and educational interest" (Proc. No. 1318)	"great ethnologic, scientific, and educational interest" (Proc. No. 1318); "various objects of historic and scientific interest" (Proc. No. 2300)	960.00 acres	Transferred from NFS to NPS, Aug. 10, 1933; boundary enlarged - Proc. No. 2300 (Sept. 24, 1938), 53 Stat. 2469. Now NM of 2,011.62 acres.	Woodrow Wilson, F.D. Roosevelt
33. Bandelier, NM. Proc. No. 1322	"certain prehistoric ruins ... of unusual ethnologic, scientific,	"unusual ethnologic, scientific, and educational	23,352.00 acres	Transferred from NFS to NPS, Feb. 25, 1932; boundary enlarged - Proc.	Woodrow Wilson,

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Monument	Specific Object(s)	Categorical Object(s)	Initial Reservation	Subsequent History/ Current Status	President
(Feb. 11, 1916), 39 Stat. 1764	and educational interest ... relics of a vanished people" (Proc. No. 1322); "pueblo-type archaeological ruins" (Proc. No. 3388); "prehistoric aboriginal ruins ... unusual scenic character together with geologic and topographic features" (Proc. No. 3539)	interest" (Proc. No. 1322)		No. 1991 (Feb. 25, 1932), 47 Stat. 2503; Proc. No. 3388 (Jan. 9, 1961), 75 Stat. 1014; Proc. No. 3539 (May 27, 1963), 77 Stat. 1066. Now NM of 32,737.20 acres.	Herbert Hoover, Dwight D. Eisenhower
34. Sieur De Monts, ME. Proc. No. 1339 (July 8, 1916), 39 Stat. 1785.	"Mount Desert Island ... discovered by Samuel de Champlain and upon which he first landed when ... he explored and described the present New England coast, an exploration and discovery of great historic interest. The topographic configuration, the geology, the fauna and the flora of the island ... are also of great scientific interest" (Proc. No. 1339)	"great historic interest ... great scientific interest" (Proc. No. 1339)	5,000.00 acres	Now Acadia NP, 40,699.48 acres; Act of Feb. 26, 1919, 40 Stat. 1178 (establishing "Lafayette NP"); Act of Jan. 19, 1929; 45 Stat. 1083, extending boundaries and changing name to "Acadia NP" (subsequent boundary changes).	Woodrow Wilson

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Monument	Specific Object(s)	Categorical Object(s)	Initial Reservation	Subsequent History/ Current Status	President
35. Capulin Mountain, NM. Proc. No. 1340 (Aug. 9, 1916), 39 Stat. 1792.	"striking example of recent extinct volcanoes and ... of great scientific and especially geologic interest" (Proc. No. 1340); "scenic and scientific integrity of Capulin Mountain National Monument" (Act of Sept. 5, 1962)	"great scientific and especially geologic interest" (Proc. No. 1340)	640.42 acres	Boundary enlarged by the Act of Sept. 5, 1962, 76 Stat. 436. Renamed Capulin Volcano NM by Pub. L. 100-225, Dec. 21, 1987, codified at 16 U.S.C. § 560uu-46(g). Boundary adjusted by Public Land Order 5273, May 14, 1980.	Woodrow Wilson
36. Old Kasaan, AK. Proc. No. 1351 (Oct. 25, 1916), 39 Stat. 1812	"certain historic aboriginal ruins of the former Haida Indian village known as 'Old Kasaan' ... representing a distinctive type of aboriginal American civilization, the vestiges of which are rapidly disappearing" (Proc. No. 1351)	"Unusual ethnologic, scientific, and educational interest" (Proc. No. 1351)	43.00 acres	Now abolished by Act of July 26, 1955, 69 Stat. 380 (property to be administered as part of Tongass National Forest).	Woodrow Wilson
37. Verendrye, ND. Proc. No. 1380 (June 29, 1917), 40 Stat. 1677	"a high and imposing butte ... it marks the spot where the Verendrye party first crossed the Missouri River in their journey to the Rocky Mountains, thus giving the place great historic interest" (Proc. No. 1380)	"great historic interest" (Proc. No. 1380)	253.04 acres	Abolished by Act of July 30, 1956, 70 Stat. 730 (property to be conveyed to state for public recreation use and as state historic site with reverter to federal government)	Woodrow Wilson
38. Casa Grande, AZ. Proc. No. 1470 (Aug. 3,	"the prehistoric ruin known as Casa Grande ... ruins of the ancient buildings and other	"objects of prehistoric interest"	480.00 acres	Boundary reduced by the Act of June 7, 1926, 44 Stat. 698. Now a NM of 472.50 acres.	Woodrow Wilson

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Monument	Specific Object(s)	Categorical Object(s)	Initial Reservation	Subsequent History/ Current Status	President
1918), 40 Stat. 1818	objects of prehistoric interest (Proc. No. 1470)				
39. Katmai, AK. Proc. No. 1487 (Sept. 24, 1918), 40 Stat. 1855	Mount Katmai ... has proved ... to be of importance in the study of volcanism, inasmuch as its eruption of June, 1912, was one of excessive violence, ranking in the first order of volcanic eruptions ... The results of this eruption are still fresh, offering excellent opportunities for studying the causes of the catastrophe and its results ... The Valley of the Ten Thousand Smokes, a valley of hot springs in a condition of development toward a possible future geyser field ... This wonderland may become of popular scenic, as well as scientific, interest for generations to come, inasmuch as all its phenomena exist upon a scale of great magnitude, arousing emotions of wonder at the inspiring spectacles, thus affording inspiration to patriotism and to the study of nature"; "features of historical	"scenic, as well as scientific, interest" (Proc. No. 1487); "features of historical and scientific interest" (Proc. No. 1950); "objects of scientific interest" (Proc. No. 2564); "ecological and other scientific values" (Proc. No. 3890)	1,088,000.00 acres	Boundary enlarged by Proc. No. 1950 (April 24, 1931), 47 Stat. 2453; valid existing rights recognized by Proc. No. 2177 (June 15, 1936), 49 Stat. 3523; boundary enlarged by Proc. No. 2564 (Aug. 4, 1942), 56 Stat. 1972; Proc. No. 3890 (Jan. 20, 1969), 83 Stat. 926; Proc. No. 4619 (Dec. 1, 1978). Redesignated Katmai National Park and Preserve by the Alaska National Interest Lands Conservation Act (ANILCA), Pub. L. 96-487, Dec. 2, 1980, 94 Stat. 2371, codified at 16 U.S.C. § 410hh-1(2). Now a NP of 3,674,540.87 acres and a national preserve of 382,074 acres.	Woodrow Wilson, Herbert Hoover, F.D. Roosevelt, L.B. Johnson, Jimmy Carter

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Monument	Specific Object(s)	Categorical Object(s)	Initial Reservation	Subsequent History/ Current Status	President
	and scientific interest and ... brown bear, moose, and other wild animals" (Proc. 1950); "inclusion of all ... [Nanek Lake] and its shores ... for the protection of the ecological and other scientific values of this lake and the existing monument" (Proc. No. 3890)				
40. Scotts Bluff, NE. Proc. No. 1547 (Dec. 12, 1919), 41 Stat. 1779	"... the highest point within the State of Nebraska ... traversed by the old Oregon Trail ... used as a landmark and rendezvous by thousands of immigrants and frontiersmen ... " (Proc. No. 1547)	"scientific interest" (Proc. No. 1547); "additional features of scenic and scientific interest" (Proc. No. 1999)	2,053.83 acres	Boundary enlarged by Proc. No. 1999 (June 1, 1932), 47 Stat. 2512; Proc. No. 2391 (March 29, 1940), 54 Stat. 2690; Act of June 30, 1961, 75 Stat. 148	Woodrow Wilson, Herbert Hoover, F.D. Roosevelt
41. Yucca House, Co. Proc. No. 1549 (Dec. 19, 1919), 41 Stat. 1781	"an imposing pile of masonry of great archaeological value, relic of the prehistoric inhabitants of that part of the country" (Proc. No. 1549)	"great archaeological value" (Proc. No. 1549)	9.60 acres	Now a NM of 9.60 acres	Woodrow Wilson
42. Lehman Caves, NV. Proc. No. 1618 (Jan. 24, 1922), 42 Stat. 2260	"certain natural caves ... of unusual scientific interest and importance" (Proc. No. 1618)	"unusual scientific interest and importance" (Proc. No. 1618)	593.03 acres	Incorporated into Great Basin NP, 77,180 acres, by Pub. L. 99-565, 100 Stat. 3181, codified at 16 U.S.C. § 410mm(d)	W.G. Harding

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Monument	Specific Object(s)	Categorical Object(s)	Initial Reservation	Subsequent History/ Current Status	President
43. Timpanogos Cave, UT. Proc. No. 1640 (Oct. 14, 1922), 42 Stat. 2285	"a natural cave ... of unusual scientific interest and importance" (Proc. No. 1640)	"unusual scientific interest and importance" (Proc. No. 1640)	250 acres	Now a NM of 250 acres	W.G. Harding, J.F. Kennedy
44. Fossil Cycad, SD. Proc. No. 1641 (Oct. 21, 1922), 42 Stat. 2286	"rich Mesozoic deposits of fossil cycads and other characteristic examples of paleobotany, which are of great scientific interest and value" (Proc. No. 1641)	"great scientific interest and value" (Proc. No. 1641)	320 acres	Abolished by Act of Aug. 1, 1956, 70 Stat. 898 (property to be administered under public land laws)	W.G. Harding
45. Hovenweep, CO. Proc. No. 1654 (March 2, 1923), 42 Stat. 2299	"four groups of ruins, including prehistoric structures, the majority of which belong to unique types not found in other National Monuments, and show the finest prehistoric masonry in the United States" (Proc. No. 1654);	"prehistoric remains" (Proc. No. 1654); "very important archaeological sites" (Proc. No. 2998); "historic and scientific value" (Proc. No. 3132)	285.80 acres	Boundary enlarged by Proc. NO. 2924 (April 26, 1951), 65 Stat. 8; Proc. No. 2998 (Nov. 20, 1952), 67 Stat. c21; Proc. No. 3132 (April 6, 1956), 70 Stat. 26. Now an NM of 784.93 acres.	W.G. Harding, Harry S. Truman, Dwight D. Eisenhower
46. Mound City Group, OH. Proc. No. 1653 (March 2, 1923), 42 Stat. 2298	"'Mound City Group' of prehistoric mounds ... is an object of great historic and scientific interest" (Proc. No. 1653)	"object of great historic and scientific interest" (Proc. No. 1653)	57.00 acres	Transferred from War Dept. to NPS, Aug. 10, 1933; boundary changed, April 3, 1952, 66 Stat. 42. Renamed and redesignated as part of Hopewell Culture National Historic Park (NHP), 412.72 acres, by Pub. L. 102-294, 106 Stat. 185, codified at 16 U.S.C. §§ 410uu, 410uu-1.	W.G. Harding

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Monument	Specific Object(s)	Categorical Object(s)	Initial Reservation	Subsequent History/ Current Status	President
47. Pipe Spring, AZ. Proc. No. 1662 (May 31, 1923), 43 Stat. 1913	"a spring ... which affords the only water along the road between Hurricane, Utah, and Fredonia, Arizona, a distance of sixty-two miles ... used as a place of refuge from hostile Indians by the early settlers" (Proc. No. 1663)		0.00 acres	Acreage conveyed to federal government by quitclaim deed, 1924. Now a NM of 40 acres.	W.G. Harding
48. Bryce Canyon, UT. Proc. No. 1664 (June 8, 1923), 43 Stat. 1914	(Establishing Proc. lists no specific objects)	"certain lands within the Powell National Forest, ... known as Bryce Canyon, are of unusual scenic beauty, scientific interest and importance" (Proc. No. 1664)	7,440.00 acres	Now Bryce Canyon NP, 35,832.58 acres; Act of June 7, 1924, 43 Stat. 593 (authorized as "Utah National Park"); name changed to "Bryce Canyon National Park" by Act of Feb. 25, 1928, 45 Stat. 147 (subsequent boundary changes).	W.G. Harding
49. Carlsbad Cave, NM. Proc. No. 1679 (Oct. 25, 1923), 43 Stat. 1929	"a limestone cavern ... of extraordinary proportions and of unusual beauty and variety of natural decoration ... as to make this a cavern equal, if not superior, in both scientific and popular interest to the better known caves" (Proc. No. 1679)	"scientific and popular interest" (Proc. No. 1679)	719.22 acres	Now Carlsbad Caverns NP, 46,427.26 acres; Act of May 14, 1930, 46 Stat. 279 (subsequent boundary changes; wilderness designated, Act of Nov. 10, 1978, 92 Stat. 3489)	W.G. Harding
50. Chiricahua, AZ. Proc. No. 1692 (April 18, 1924), 43 Stat. 1946	"certain natural formations, known as 'The Pinnacles,' of scientific interest" (Proc. No. 1692)	"scientific interest" (Proc. No. 1692); "objects of historic and scientific interest" (Proc. No. 2288)	3,655.12 acres	Now a NM of 11,982.38 acres	W.G. Harding

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Monument	Specific Object(s)	Categorical Object(s)	Initial Reservation	Subsequent History/ Current Status	President
51. Craters of the Moon, ID. Proc. No. 1694 (May 2, 1924), 43 Stat. 1947	"remarkable fissure eruption together with its associated volcanic cones, craters, rifts, lava flows, caves natural bridges, and other phenomena characteristic of volcanic action which are of unusual scientific value and general interest" (Proc. No. 1694); "an island of vegetation completely surrounded by lava, that is scientifically valuable for ecological studies because it contains a mature, native sagebrush-grassland association which has been undisturbed by man or domestic livestock" (Proc. No. 3506)	"unusual scientific value and general interest ... many curious and unusual phenomena of great educational value" (Proc. No. 1694); "additional features of scientific interest" (Proc. No. 1843)	22,651.80 acres	Boundary enlarged by Proc. No. 1843 (July 23, 1928), 45 Stat. 2959; Proc. No. 1916 (July 9, 1930), 46 Stat. 3029; lands excluded by Proc. No. 2499 (July 18, 1941), 55 Stat. 1660; boundary enlarged by Proc. No. 3506 (Nov. 19, 1962), 77 Stat. 960. Now an NM of 53,545.05 acres	Calvin Coolidge, Herbert Hoover, F.D. Roosevelt, John F. Kennedy
52. Fort Marion (Castillo de San Marcos), FL. Proc. No. 1713 (Oct. 15, 1924), 43 Stat. 1968	"various military reservations ... which comprise areas of historic and scientific interest" (Proc. No. 1713)	"areas of historic and scientific interest" (Proc. No. 1713)	18.51 acres	Transferred from War Dept. to NPS Aug. 10, 1933; boundary adjustment authorized by the Act of June 29, 1936, 49 Stat. 2029; name changed from "Fort Marion" to "castillo de San Marcos," Act of June 5, 1942, 56 Stat. 312; addition of lands authorized by Act of July 5, 1960, 74 Stat. 317. Now a NM of 20.18.	Calvin Coolidge
53. Fort Matanzas, FL.	"various military reservations	"areas of historic and	1 acre	Transferred from War Dept. to NPS	Calvin

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Monument	Specific Object(s)	Categorical Object(s)	Initial Reservation	Subsequent History/ Current Status	President
Proc. No. 1713 (Oct. 15, 1924), 43 Stat. 1968	... which comprise areas of historic and scientific interest" (Proc. No. 1713)	scientific interest" (Proc. No. 1713)		Aug. 10, 1933; boundary enlarged by Proc. No. 2773 (March 24, 1948), 62 Stat. 1491; Proc. No. 2114 (Jan. 9, 1935), 49 Stat. 3433. Now a NM of 298.51 acres.	Coolidge, F.D. Roosevelt
54. Fort Pulaski, GA. Proc. No. 1713 (Oct. 15, 1924), 43 Stat. 1968	"various military reservations ... which comprise areas of historic and scientific interest" (Proc. No. 1713); "the Cockspur Island Lighthouse Reservation ... contains an old abandoned lighthouse which is contemporary with Fort Pulaski and ... of historic interest"	"areas of historic and scientific interest" (Proc. No. 1713)	20 acres	Transferred from War Dept. to NPS Aug. 10, 1933; boundary enlarged by Act of June 2, 1936, 49 Stat. 1979; Proc. No. 3254 (Aug. 14, 1958), 72 Stat. c52. Now a NM of 5,365.13 acres.	Calvin Coolidge
55. Statue of Liberty, NY. Proc. No. 1713 (Oct. 15, 1924), 43 Stat. 1968	"various military reservations ... which comprise areas of historic and scientific interest .. the site of the Statue of Liberty Enlightening the World" (Proc. No. 1713)	"areas of historic and scientific interest" (Proc. No. 1713)	2.5 acres	Transferred from War Dept. to NPS Aug. 10, 1933; boundary enlarged by Proc. No. 2250 (Sept. 7, 1937), 51 Stat. 393; Proc. No. 3656 (May 11, 1965), 79 Stat. 1490. Now a NM of 58.38 acres.	Calvin Coolidge, F.D. Roosevelt, L.B. Johnson
56. Castle Pinckney, SC. Proc. No. 1713 (Oct. 15, 1924), 43 Stat. 1968.	"various military reservations ... which comprise areas of historic and scientific interest" (Proc. No. 1713)	"areas of historic and scientific interest" (Proc. No. 1713)	3.5 acres	Now abolished by Act of March 29, 1956, 70 Stat. 61 (property to be disposed of in accordance with the laws relating to the disposition of surplus Federal property).	Calvin Coolidge
57. Wupatki, AZ. Proc.	"two groups of prehistoric ruins	"prehistoric remains" (Proc.	2,234.10	Boundary enlarged - Proc. No. 2243	Calvin

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Monument	Specific Object(s)	Categorical Object(s)	Initial Reservation	Subsequent History/ Current Status	President
No. 1721 (Dec. 9, 1924), 43 Stat. 1977.	built by the ancestors of a most picturesque tribe of Indians still surviving in the United States, the Hopi or People of Peace" (Proc. No. 1721)	No. 1721); "prehistoric and archaeological ruins of historic and scientific interest" (Proc. No. 2243)	acres	(July 9, 1937), 50 Stat. 1841; lands excluded - Proc. No. 2454 (Jan. 22, 1941), 55 Stat. 1608; boundary revised - Act of Aug. 10, 1961, 75 Stat. 337. Now NM 35,253.24 acres.	Coolidge
58. Meriwether Lewis, TN. Proc. No. 1730 (Feb. 6, 1925), 43 Stat. 1986.	"the grave of Captain Meriwether Lewis [whose] faithful and effective services are of transcendent importance to the Nation" (Proc. No. 1730)		50.00 acres	Boundary enlarged - Proc. No. 1825 (Dec. 6, 1927), 45 Stat. 2935; transferred from War Dept. to NPS, Aug. 10, 1933; included in the Natchez Trace Parkway, Act of Aug. 10, 1961, 75 Stat. 335. Now Part of Natchez Trace National Scenic Trail, 10,995 acres, established by Pub. L. 98-11, codified at 16 U.S.C. § 1244(a)(12).	Calvin Coolidge, F.D. Roosevelt
59. Glacier Bay, AK. Proc. No. 1733 (Feb. 26, 1925), 43 Stat. 1988.	"a number of tidewater glaciers of the first rank in a magnificent setting of lofty peaks ... a unique opportunity for the scientific study of glacial behavior and of resulting movements and development of flora and fauna and of certain valuable relics of ancient interglacial forests ... of historic interest having been visited by explorers and scientists since the early voyages of Vancouver in 1794, who have left valuable	"unique opportunity for ... scientific study ... historic interest" (Proc. No. 1733); "geologic features of scientific interest" (Proc. No. 2330)	1,379,315.58 acres	Boundary enlarged - Proc. No. 2330 (April 18, 1939), 53 Stat. 2534; lands excluded - Proc. No. 3089 (March 31, 1955), 69 Stat. c27; boundary enlarged by Proc. No. 4618 (Dec. 1, 1978). Boundary expanded and redesignated a NP and national preserve by ANILCA, Pub. L. 96-487, 94 Stat 2382, codified at 16 U.S.C. § 410hh-1(1). Now a NP of 3,224,938 acres and a national preserve of 55,439 acres.	Calvin Coolidge, F.D. Roosevelt, Dwight D. Eisenhower, L.B. Johnson

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Monument	Specific Object(s)	Categorical Object(s)	Initial Reservation	Subsequent History/ Current Status	President
	records of such visits and explorations" (Proc. No. 1733)				
60. Father Millet Cross, NY. Proc. No. 1745 (Sept. 5, 1925), 44 Stat. 2582.	"Father Millet, a French Jesuit Priest, who came to Canada - then known as New France - in 1667, and who did, on Good Friday, 1688, erect and dedicate a cross on what is now the Fort Niagra Military Reservation" (Proc. No. 1745)		0.0074 acres	Now abolished by Act of Sept. 7, 1949, 63 Stat. 691 (property conveyed to state for use as part of state park).	Calvin Coolidge
61. Lava Beds, CA. Proc. No. 1755 (Nov. 21, 1925), 44 Stat. 2591.	"cliffs with petroglyphic carvings from a prehistoric period ... a large cinder cone, important to the geological interpretation of the ... Monument" (Proc. No. 2925)	"objects of such historic and scientific interest as to justify their reservation and protection as a National Monument" (Proc. No. 1755); "prehistoric and geologic phenomena" (Proc. No. 2925)	45,589.92 acres	Transferred from NFS to NPS, Aug. 10, 1933; boundary enlarged - Proc. No. 2925 (April 27, 1951), 65 Stat. c9; Oct. 26, 1974, 88 Stat. 1447. Now NM of 46,821.33 acres.	Calvin Coolidge, Harry Truman
62. Arches, UT. Proc. No. 1875 (April 12, 1929), 46 Stat. 2988.	"extraordinary examples of wind erosion in the shape of gigantic arches, natural bridges, 'windows,' spires, balanced rocks, and other unique wind-worn sandstone formations, the preservation of which is desirable because of their educational and scenic value"	"educational and scenic value" (Proc. No. 1875); "geologic and prehistoric structures of historic and scientific interest" (Proc. No. 2312); "outstanding interest" (Proc. No. 3360); "objects of geological and scientific interest to	4,833.63 acres	Boundary enlarged - Proc. No. 2312 (Nov. 25, 1938) 53 Stat. 2504; boundary revised - Proc. No. 3360 (July 22, 1960), boundary revised - Proc. No. 3360 (July 22, 1960), 74 Stat. c79; boundary enlarged - Proc. No. 3887 (Jan. 20, 1969), 83 Stat. 920. Now Natl. Park (Arches NP) - 66,343.51 acres; Act of Nov. 12,	Herbert Hoover, F.D. Roosevelt, Dwight D. Eisenhower, L.B. Johnson

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Monument	Specific Object(s)	Categorical Object(s)	Initial Reservation	Subsequent History/ Current Status	President
	(Proc. No. 1875)	complete the geologic story presented at the monument" (Proc. No. 3887)		1971, 85 Stat. 422 (codified at 16 U.S.C. § 272).	
63. Holy Cross, CO. Proc. No. 1877 (May 11, 1929), 46 Stat. 2993.	"the figure in the form of a Greek Cross found on the side of the Mount of the Holy Cross ... is an object of much public interest" (Proc. No. 1977)	"object of much public interest" (Proc. No. 1877)	1,392.00 acres	Now abolished by Act of Aug. 3, 1950, 64 Stat. 404 (property to be administered as part of national forest).	Herbert Hoover
64. Sunset Crater, AZ. Proc. No. 1911 (May 26, 1930), 46 Stat. 3023.	(Establishing Proc. No. 1911 lists no specific objects)	"certain geologic formations ... of scientific and public interest" (Proc. No. 1911)	3,040.00 acres	Transferred from NFS to NPS, Aug. 10, 1933. Name changed to Sunset Crater Volcano NM by Pub. L. 101-612, Nov. 16, 1990, 104 Stat. 3222. Now NM of 3,040.00 acres.	Herbert Hoover
65. Great Sand Dunes, CO. Proc. No. 1994 (March 17, 1932), 47 Stat. 2506.	"the great sand dunes and additional features of scenic, scientific, and educational interest" (Proc. No. 1994)	"features of scenic, scientific, and educational interest" (Proc. No. 1994)	35,528.36 acres	Boundary redefined - Proc. No. 2681 (March 12, 1946), 60 Stat. 1339; boundary revised - Proc. No. 3138 (June 7, 1956), 70 Stat. 631; boundary enlarged - Act of Nov. 10, 1978, 92 Stat. 3474. Now NM of 36,426.16 acres.	Herbert Hoover, Harry S. Truman, Dwight D. Eisenhower
66. Grand Canyon "II", AZ. Proc. No. 2022 (Dec. 22, 1932), 47 Stat. 2547.	"the Grand Canyon of the Colorado River is an object of unusual scientific interest, being the greatest eroded canyon within the United States ... and ... that portion of the canyon which continues down the	"unusual scientific interest" (Proc. No. 2022)	273,145.00 acres	Lands excluded - Proc. No. 2393 (April 4, 1940), 54 Stat. 2692. Now Natl. Park (Grand Canyon NP) - 1,189,641.37 acres; Act of Jan. 31, 1975, 88 Stat. 2089 (incorporated existing Grand Canyon NP, Grand Canyon "II" National Monument,	Herbert Hoover, F.D. Roosevelt

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Monument	Specific Object(s)	Categorical Object(s)	Initial Reservation	Subsequent History/ Current Status	President
	Colorado River below the Grand Canyon National Park contains much that is most significant and important in this unusual scientific interest" (Proc. No. 2022)			Marble Canyon National Monument, and portions of Glen Canyon and Lake Mead National Recreation Areas).	
67. White Sands, NM. Proc. No. 2025 (Jan. 18, 1933), 47 Stat. 2551.	"the white sands and additional features of scenic, scientific, and educational interest" (Proc. No. 2025)	"features of scenic, scientific, and educational interest" (Proc. No. 2025)	131,486.84 acres	Boundary enlarged - Proc. No. 2108 (Nov. 28, 1934), 49 Stat. 3426; lands excluded - Proc. No. 2295 (Aug. 29, 1938), 53 Stat. 2465; boundary enlarged - Act of June 6, 1942, 56 Stat. 327; Proc. No. 3024 (June 24, 1953), Nov. 10, 1978. 92 Stat. 3475. Now NM 143,732.92 acres.	Herbert Hoover, F.D. Roosevelt, Dwight D. Eisenhower
68. Death Valley, CA. Proc. No. 2028 (Feb. 11, 1933), 47 Stat. 2554 (includes Devil's Hole, Proc. No. 2961 Jan. 17, 1952), 66 Stat. 18)	"(Establishing Proc. No. 2028 lists no specific objects); "a remarkable underground pool known as Devil's Hole ... said pool is a unique subsurface remnant of the prehistoric chain of lakes which in Pleistocene times formed the Death Valley Lake System ... [and contains] a peculiar race of desert fish, and ... said pool is of ... outstanding scientific importance" (Proc. No. 2961)	"Unusual features of scenic, scientific, and educational interest" (Proc. No. 2028); "various objects of historic and scientific interest" (Proc. No. 2228)	848,581.36 acres	Boundary enlarged Proc. No. 2228 (Mar. 26, 1937), 50 Stat. 1823; Proc. No. 2961 (Jan. 17, 1952), 66 Stat. 18 (adding a "detached unit"). Established as a NP by Pub. L. 103-433 (Oct. 4, 1994), 108 Stat. 4471, codified at 16 U.S.C.A. § 410aaa. Now a NP of 2,048,928.88 acres.	Herbert Hoover, F.D. Roosevelt, Harry S. Truman

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Monument	Specific Object(s)	Categorical Object(s)	Initial Reservation	Subsequent History/ Current Status	President
69. Saguaro, AZ. Proc. No. 2032 (Mar. 1, 1933), 47 Stat. 2557.	exceptional growth ... of various species of cacti, including the so-called giant cactus" (Proc. No. 2032); "a remarkable display of relatively undisturbed lower Sonoran desert vegetation, including a saguaro stand which equals or surpasses saguaro stands elsewhere in the Nation" (Proc. No. 3439)	"outstanding scientific interest" (Proc. No. 3439)	53,510.08 acres	Transferred from NSF to NPS, Aug. 10, 1933; boundary enlarged - Proc. No. 3439 (Nov. 15, 1961), 76 Stat. 1437; Act of Oct. 21, 1976, 90 Stat. 2735; wilderness designated - Act of Oct. 20, 1976, 90 Stat. 2692. Established as a NP by Pub. L. 103-364 (Oct 14, 1994), 108 Stat. 3467, codified at 16 U.S.C.A. §§ 410zz, 410zz-1, 410zz-2. Now a NP of 83,108.09 acres.	Herbert Hoover, John F. Kennedy
70. Black Canyon of the Gunnison, CO. Proc. No. 2033 (Mar. 2, 1933), 47 Stat. 2558.	"spectacular gorges and additional features of scenic, scientific, and educational interest" (Proc. No. 2033)	"features of scenic, scientific, and educational interest" (Proc. No. 2033)	10,287.95 acres	Boundary enlarged - Proc. No. 2286 (May 16, 1938), 52 Stat. 1548, Proc. No. 2372 (Oct. 28, 1939), 54 Stat. 2669; lands excluded - Proc. No. 3344 (April 8, 1960), 74 Stat. 5. Boundary enlarged by Pub. L. 98-357 (June 13, 1984), 98 Stat. 397. Now a NM of 20,646.14.	Herbert Hoover, F.D. Roosevelt, Dwight D. Eisenhower
71. Channel Islands, CA. Proc. No. 2281 (April 26, 1938), 52 Stat. 1541	"fossils of Pleistocene elephants and ancient trees ... and ... noteworthy examples of ancient volcanism, deposition, and active sea erosion and ... various other objects of ecological and scientific interest" (Proc. No. 2281)	"objects of geological and scientific interest" (Proc. No. 2281)	1,119.98 acres	Boundary enlarged by Proc. No. 2825 (Feb. 9, 1949), 63 Stat. 1258. Established as a NP by the Act of March 5, 1980 (May 31, 1980), 94 Stat. 67. Now a NP of 10,887.82.	F.D. Roosevelt, Harry S. Truman

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Monument	Specific Object(s)	Categorical Object(s)	Initial Reservation	Subsequent History/ Current Status	President
72. Cedar Breaks, UT. Proc. No. 2054 (Aug. 22, 1933), 48 Stat. 1705.	"spectacular cliffs, canyons, and features of scenic, scientific, and educational interest" (Proc. No. 2054)	"features of scenic, scientific, and educational interest" (Proc. No. 2054)	5,701.39 acres	Boundary adjusted by Act of Mar. 7, 1942, 56 Stat. 141; boundary revised by Act of June 30, 1961, 75 Stat. 198. Now a NM of 6,154 acres.	F.D. Roosevelt
73. Fort Jefferson, FL. Proc. No. 2112 (Jan. 4, 1935), 49 Stat. 3430.	"Fort Jefferson and the historic and educational interest contained in such area" (Proc. No. 2112)	"historic and educational interest" (Proc. No. 2112)	47,125.00 acres	Redesignated Dry Tortugas NP by Pub. L. 102-525 (Oct. 26, 1992), 106 Stat. 3439, codified at 16 U.S.C.A. § 410xx. Now a NP of 61,480 acres.	F.D. Roosevelt
74. Joshua Tree, CA. Proc. No. 2193 (Aug. 10, 1936), 50 Stat. 1760.	(Establishing proclamation lists no specific objects)	"historic and prehistoric structures, and ... various objects of historic and scientific interest" (Proc. No. 2193)	378,018.40 acres	Boundary reduced and revised by Act of Sept. 25, 1950, 64 Stat. 1033; boundary enlarged by Act of June 30, 1961, 75 Stat. 197. Established as a NP by Pub. L. 103-433 (Oct. 31, 1994), 108 Stat. 4488, codified at 16 U.S.C.A. § 410aaa-22. Now a NP of 548,536.36 acres.	F.D. Roosevelt
75. Zion, UT. Proc. No. 2221 (Jan. 22, 1937), 50 Stat. 1809	"volcanic phenomena of unusual scientific value, and ... various other objects of geological and scientific interest" (Proc. No. 2221)	"objects of geological and scientific interest" (Proc. No. 2221)	36,431.05 acres	Redesignated Zion NP by Act of July 11, 1956, 70 Stat. 527. Subsequent boundary changes. Now a NP of 143,040.40.	F.D. Roosevelt
76. Organ Pipe Cactus, AZ. Proc. No. 2232 (Apr. 13, 1937), 50 Stat. 1827	(Establishing proclamation lists no specific objects)	"historic landmarks, and ... various objects of historic and scientific interest" (Proc. No. 2232)	329,199.10 acres	Now a NM of 329,316.31	F.D. Roosevelt

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Monument	Specific Object(s)	Categorical Object(s)	Initial Reservation	Subsequent History/ Current Status	President
77. Capitol Reef, UT. Proc. No. 2246 (Aug. 2, 1937), 50 Stat. 1856	"narrow canyons displaying evidence of ancient sand dune deposits of unusual scientific value, and ... various other objects of geological and scientific interest" (Proc. No. 2246)	"geological and scientific interest" (Proc. No. 2246)	32,607.31 acres	Boundary enlarged by Proc. No. 3249 (July 2, 1958), 72 Stat. 48; Proc. No. 3888 (Jan. 20, 1969), 83 Stat. 922. Redesignated Capitol Reef NP by the Act of Dec. 18, 1971, 85 Stat. 739, codified at 16 U.S.C. § 273. Now a NP of 222,753.35	F.D. Roosevelt, Dwight D. Eisenhower, L.B. Johnson
78. Fort Laramie, WY. Proc. No. 2292 (July 16, 1938), 53 Stat. 2461	(Establishing proclamation lists no specific objects)	"the lands and structures are of great historic interest and constitute a historic landmark" (Proc. No. 2292)	214.41 acres	Redesignated Fort Laramie National Historic Site (NHS) by the Act of Apr. 29, 1960, 74 Stat. 83. Subsequent boundary changes. Now a NHS of 831.11.	F.D. Roosevelt
79. Santa Rosa Island, FL. Proc. No. 2337 (May 17, 1939), 53 Stat. 2542	(Establishing proclamation lists no specific objects)	"various objects of geological and scientific interest" (Proc. No. 2337)	9,500.00 acres	Abolished by Act of July 30, 1946, 60 Stat. 712. (property donated to county for its use, but disposal by county prohibited except to state or federal government)	F.D. Roosevelt
80. Tuzigoot, AZ. Proc. No. 2344 (July 25, 1939), 53 Stat. 2548	(Establishing proclamation lists no specific objects)	"historic and prehistoric structures and other objects of historic or scientific interest" (Proc. No. 2344)	42.67 acres	Boundary enlarged by the Act of Nov. 10, 1978, 92 Stat. 3475. Now a NM of 57.78 acres.	F.D. Roosevelt
81. Jackson Hole, WY. Proc. No. 2578 (Mar. 15, 1943), 57 Stat. 731	(Establishing proclamation lists no specific objects)	"historic landmarks and other objects of historic and scientific interest" (Proc. No. 2578)	210,950.00 acres	Redesignated Grand Teton NP by the Act of Sept. 14, 1950, 64 Stat. 849. Now a NP of 307,619.71 acres.	F.D. Roosevelt

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82. Effigy Mounds, IA. Proc. No. 2860 (Oct. 25, 1949), 64 Stat. A371	"the earth mounds ... are of great scientific interest because of the variety of their forms ... illustrative of a significant phase of the mound-building culture of the prehistoric American Indians" (Proc. No. 2860)	"national scientific importance" (Proc. No. 2860)	1,000.00 acres	Boundary enlarged by the Act of May 27, 1961, 75 Stat. 88. Now a NM of 1,481.39.	Harry S. Truman
83. Edison Laboratory, NJ. Proc. No. 3148 (July 14, 1956), 70 Stat. c49	"the Edison Laboratory, used by the great inventor for the last 44 years of his life and the scene of many of his celebrated inventions" (Proc. No. 3148)		1.51 acres	Boundary enlarged by the Act of June 23, 1959, 73 Stat. 87. Redesignated Edison NHS by the Act of Sept. 5, 1962, 76 Stat. 428. Subsequent boundary changes. Now a NHS of 21.25.	Dwight D. Eisenhower
84. Chesapeake and Ohio Canal, MD. Proc. No. 3391 (Jan. 18, 1961), 75 Stat. 1023	(Establishing proclamation lists no specific objects)	"the Chesapeake and Ohio Canal is of historic and scientific interest, and historic structures and objects of scientific interest are situated upon the lands thereof" (Proc. No. 3391)	5,263.94 acres	Redesignated Chesapeake and Ohio NHP by the Act of Jan. 8, 1971, 84 Stat. 1978, codified at 16 U.S.C. § 410y. Now a NHP of 14,068.62 acres.	Dwight D. Eisenhower
85. Russell Cave, AL. Proc. No. 3413 (May 11, 1961), 75 Stat. 1058	"Russell Cave ... is recognized by scientists to contain outstanding archeological and ethnological evidences of human habitation in excess of 8,000 years" (Proc. No. 3413)	"the scientific importance and educational value of Russell Cave" (Proc. No. 3413)	310.45 acres	Now a NM of 310.45 acres.	John F. Kennedy

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Monument	Specific Object(s)	Categorical Object(s)	Initial Reservation	Subsequent History/ Current Status	President
86. Buck Island Reef, VI. Proc. No. 3443 (Dec. 28, 1961), 76 Stat. 1441	"Buck Island and its adjoining shoals, rocks, and undersea coral reef formations possess one of the finest marine gardens in the Caribbean Sea ... unique natural area and the rare marine life which are dependent upon it" (Proc. No. 3443)	"these lands and their related features are of great scientific interest and educational value to students of the sea and to the public ... area of outstanding scientific, aesthetic, and educational importance" (Proc. No. 3443)	850.00 acres	Boundary enlarged by Proc. No. 4346 (Feb. 1, 1975), 89 Stat. 1238; Proc. No. 4346 amended by Proc. No. 4359 (Mar. 28, 1975), 89 Stat. 1254. Now a NM of 880 acres.	John F. Kennedy, Gerald R. Ford
87. Marble Canyon, AZ. Proc. No. 3889 (Jan. 20, 1969), 83 Stat. 924	"the Marble Canyon of the Colorado River in Arizona, a northerly continuation of the world-renowned Grand Canyon, possesses unusual geologic and paleontologic features and objects and other scientific and natural values" (Proc. No. 3889)	"unusual geologic and paleontologic features and objects and other scientific and natural values" (Proc. No. 3889)	32,546.69 acres	Now part of Grand Canyon NP, established by the Act of Jan. 3, 1975, 88 Stat. 2089, incorporating the existing Grand Canyon NP, Grand Canyon II NM, Marble Canyon NM, and portions of Glen Canyon and Lake Mead National Recreation Areas. Now part of a NP of 1,189,641.37	Lyndon B. Johnson
88. Admiralty Island, AK. Proc. No. 4611 (Dec. 1, 1978), 93 Stat. 1446	"Archaeological sites and objects ... cultural history of the Tlingit Indians ... exceptional distribution of animal species" "archeological and historical resources in a relatively unspoiled natural ecosystem" (Proc. No. 4611)		1,100,000.00 acres	Established as a monument within Tongass National Forest by Pub. L. 96-487 (Dec. 2, 1980), 94 Stat. 2399.	Jimmy Carter

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Monument	Specific Object(s)	Categorical Object(s)	Initial Reservation	Subsequent History/ Current Status	President
89. Aniakchak, AK. Proc. No. 4612 (Dec. 1, 1978), 93 Stat. 1448	"one of the world's largest calderas ... textbook examples of certain volcanic features such as lava flows, cinder cones, and explosion pits ..." (Proc. No. 4612)		350,000.00 acres	Established as a NM and preserve by ANILCA, Pub. L. 96-487 (Dec. 2, 1980), 94 Stat. 2371, codified at 16 U.S.C. § 410hh(1). Now a NM of 137,176 acres and a national preserve of 434,933 acres.	Jimmy Carter
90. Becharof, AK. Proc. No. 4613 (Dec. 1, 1978), 93 Stat. 1450	"one of the densest known ... populations of the great Alaska brown bear ... Gas Rocks under Mount Peulik" (Proc. No. 4613)		1,200,000.00 acres	Established as Becharof National Wildlife Refuge (NWR) by ANILCA, Pub. L. 96-487 (Dec. 2, 1980), 94 Stat. 2385. Now a NWR of 1,200,000 acres.	Jimmy Carter
91. Bering Land Bridge, AK. Proc. No. 4614 (Dec. 1, 1978), 93 Stat. 1451	"rich archeological sites ... paleontological sites providing abundant evidence of the migration of plants and animals ... summering area for a number of Old World bird species ..."; "the migration route by which many plants, animals, and humans arrived on the North American continent" (Proc. No. 4614)		2,590,000.00 acres	Established as a NM by ANILCA, Pub. L. 96-487 (Dec. 2, 1980), 94 Stat. 2371, codified at 16 U.S.C. § 410hh(2). Now a NM of 2,690,179 acres.	Jimmy Carter
92. Cape Krusenstern, AK. Proc. No. 4615 (Dec. 1, 1978), 93 Stat. 1453	"one hundred fourteen horizontal ridges hold an archeological record of every major cultural period associated with habitation of the Alaska		560,000.00 acres	Established as a NM by ANILCA, Pub. L. 96-487 (Dec. 2, 1980), 94 Stat. 2371, codified at 16 U.S.C. § 410hh(3). Now a NM of 444,673 acres.	Jimmy Carter

Acreage figures are estimated federal acreage where available, but may in some cases be total acreage.

Monument	Specific Object(s)	Categorical Object(s)	Initial Reservation	Subsequent History/ Current Status	President
	coastline in the last 5000 years ... older archeological record dating back to pre-Eskimo period of 8000 years ago ... a still recognizable Illinoian glacial esker, ... over 100,000 years old"; "archeological record of great significance ..." (Proc. No. 4615)				
93. Denali, AK. Proc. No. 4616 (Dec. 1, 1978), 93 Stat. 1455	southern half of Mt. McKinley "significant system of glaciers ... Cathedral Spires ... McKinley caribou herd ... unique area of warm springs" (Proc. No. 4616)	"protection of the geological, biological, and other phenomena ..." (Proc. No. 4616)	3,890,000.00 acres	Incorporated with Mt. McKinley NP as Denali National Park and Preserve by ANILCA, Pub. L. 96-487 (Dec. 2, 1980), 94 Stat. 2371, codified at 16 U.S.C. § 410hh-1(3). Now a NP of 4,724,505.36 acres and a national preserve of 1,304,132 acres.	Jimmy Carter
94. Gates of the Arctic, AK. Proc. No. 4617 (Dec. 1, 1978), 93 Stat. 1457	"wide variety of interior arctic geological and biological forms ... progression of ecosystems ... substantial portion of the habitat requirements for the Western Arctic caribou herd ... [s]everal known traditional Indian- Eskimo trade routes ... opportunities for historical study of the life of the Alaskan pioneer miner of the early	"protection of the biological, geological, archeological, historical, and other phenomena" (Proc. No. 4617)	8,220,000.00 acres	Established as a National Park and Preserve by ANILCA, Pub. L. 96-487 (Dec. 2, 1980), 94 Stat. 2371, codified at 16 U.S.C. § 410hh(4). Now a NP of 4,724,505.36 acres and a national preserve of 1,304,132 acres.	Jimmy Carter

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Monument	Specific Object(s)	Categorical Object(s)	Initial Reservation	Subsequent History/ Current Status	President
	twentieth century" (Proc. No. 4617)				
95. Kenai Fjords, AK. Proc. No. 4620 (Dec. 1, 1978), 93 Stat. 1462	Harding Icefield "rain forest habitats" (Proc. No. 4620)	"significant opportunity for geologic study of mountain building and for scientific study of ecological variations from an icecap environment to a marine shoreline environment" (Proc. No. 4620)	570,000.00 acres	Established as a NP by ANILCA, Pub. L. 96-487 (Dec. 2, 1980), 94 Stat. 2371, codified at 16 U.S.C. § 410hh(5). Now a NP of 529,273 acres.	Jimmy Carter
96. Kobuk Valley, AK. Proc. No. 4621 (Dec. 1, 1978), 93 Stat. 1463	Onion Portage Archeological Dist.; Great and Little Kobuk Sand Dunes; "Archeological features ... illustrate an unbroken continuum of human adaptation from the early pre-Eskimo people of 10,500 years ago to present-day ... essentially unspoiled laboratory for the study of the northern boreal forest." (Proc. No. 4621)		1,710,000.00 acres	Established as a NP by ANILCA, Pub. L. 96-487 (Dec. 2, 1980), 94 Stat. 2371, codified at 16 U.S.C. § 410hh(6). Now a NP of 1,669,643 acres.	Jimmy Carter
97. Lake Clark, AK. Proc. No. 4622 (Dec. 1, 1978), 93 Stat. 1465	Redoubt and Iliamna volcanoes; Mutchatna caribou herd; Kijik Village; "examples of geological phenomena associated with ... the Alaska		2,500,000.00 acres	Established as a NP and national preserve by ANILCA, Pub. L. 96-487 (Dec. 2, 1980), 94 Stat. 2371, codified at 16 U.S.C. § 410hh(7). Now a NP of 2,573,724.02 acres and a national	Jimmy Carter

Acres figures are estimated federal acreage where available, but may in some cases be total acreage.

Monument	Specific Object(s)	Categorical Object(s)	Initial Reservation	Subsequent History/ Current Status	President
	Range and the Chigmit Mountains ... an outstanding example of ecological diversity in zones which remain relatively unspoiled ... (Proc. No. 4622)			preserve of 1,297,503.16 acres.	
98. Misty Fjords, AK. Proc. No. 4623 (Dec. 1, 1978), 93 Stat. 1466	"extraordinarily deep and long fjords with sea cliffs rising thousands of feet. Active glaciers ... traditional native hunting and fishing grounds ... a mid-1800's military post-port entry ... wildlife representative of nearly every ecosystem in southeast Alaska"; "essentially untouched two million-acre area in the Coast Mountains of Southeast Alaska within which are found nearly all of the important geological and ecological characteristics of the region" (Proc. No. 4623)		2,285,000.00	Established as a monument within Tongass National Forest by Pub. L. 96-487 (Dec. 2, 1980), 94 Stat. 2399	Jimmy Carter
99. Noatak, AK. Proc. No. 4624 (Dec. 1, 1978), 93 Stat. 1468	"Grand Canyon of the Noatak River... [n]early 200 archeological sites"; "the largest mountain-ringed river basin in the Nation still virtually unaffected by technological human activity ... an essential		5,880,000.00 acres	Established as a national preserve by ANILCA, Pub. L. 96-487 (Dec. 2, 1980), 94 Stat. 2371, codified at 16 U.S.C. § 410hh-1(a). Now a national preserve of 6,275,935 acres.	Jimmy Carter

Acreage figures are estimated federal acreage where available, but may in some cases be total acreage.

Monument	Specific Object(s)	Categorical Object(s)	Initial Reservation	Subsequent History/ Current Status	President
100. Wrangell-St. Elias, AK. Proc. No. 4625 (Dec. 1, 1978), 93 Stat. 1470	base against which scientists may judge environmental dynamics of the future" (Proc. No. 4624) Mt. St. Elias; Mt. Wrangell; Malaspina Glacier; Kennecott Copper Works; "the greatest assemblage of mountain peaks over 14,500 feet ... found in the Nation ... an active glacial complex ... mudcones and hot springs ... ecological islands ... [t]hree major culture areas converge here ... the North Athapascans, the Pacific Eskimo, and the Chugach" (Proc. No. 4625)		10,950,000.0 0 acres	Established as a NP and national preserve by ANILCA, Pub. L. 96-487 (Dec. 2, 1980), 94 Stat. 2371, codified at 16 U.S.C. § 410hh(9). Now a NP of 7,656,394.06 acres and a national preserve of 3,992,209.55 acres.	Jimmy Carter
101. Yukon-Charley, AK. Proc. No. 4626 (Dec. 1, 1978), 93 Stat. 1472	"historic remains of early mining activity ... fossils estimated to be 700 million years old ... Ice Age fossils ... relict Pleistocene plant communities"; "outstanding paleontological resources and ecologically diverse natural resources ... a nearly unbroken visible series of rock strata representing a range in geologic		1,720,000.00 acres	Established as Yukon-Charley Rivers National Preserve by ANILCA, Pub. L. 96-487 (Dec. 2, 1980), 94 Stat. 2371, codified at 16 U.S.C. § 410hh(10). Now a national preserve of 2,183,093 acres.	Jimmy Carter

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Monument	Specific Object(s)	Categorical Object(s)	Initial Reservation	Subsequent History/ Current Status	President
102. Yukon Flats, AK. Proc. No. 4627 (Dec. 1, 1978), 93 Stat. 1473	time from pre-Cambrian to Recent" (Proc. No. 4626) "largest and most complete example of an interior Alaska solar basin ... unique race of salmon ... rich population of furbearers"; "opportunity to investigate the life and society of the peoples which utilized these resources [furbearers]" (Proc. No. 4627)		10,600,000 acres	Established as Yukon Flats NWR by ANILCA, Pub. L. 96-487 (Dec. 2, 1980), 94 Stat. 2388. Now a NWR of 8,630,000 acres.	Jimmy Carter

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Exhibit - E

PRESIDENTS AND THE ANTIQUITIES ACT

The following lists units and approximate acreage affected by each President. Where acreage figures are not given they are not available.

Theodore Roosevelt (1906 (Antiquities Act enacted) -1909)

Chaco Canyon National Monument	10,643.13
Cinder Cone National Monument	5,120
Devil's Tower National Monument	1,152.91
El Morro National Monument	160
Gila Cliff Dwellings National Monument	160
Grand Canyon I National Monument	808,120
Lassen Peak National Monument	1,280
Lewis & Clark National Monument	160
Montezuma Castle National Monument	161.39
Mount Olympus National Monument	639,000
Muir Woods National Monument	295
Natural Bridges National Monument	120
Petrified Forest National Monument	60,776.02
Pinnacles National Monument	1,320
Tonto National Monument	640
Tumacacori National Monument	10
Wheeler National Monument	300

William H. Taft (1909-1913)

Big Hole Battlefield National Monument	655.61
Colorado National Monument	13,466.21
Devils Postpile National Monument	798.46
Gran Quivira National Monument	183.77
Lewis and Clark National Monument	160
Mount Olympus National Monument	
Mukuntuweap (Zion) National Monument	16,000
Natural Bridges National Monument	120
Navajo National Monument	360
Oregon Caves National Monument	465.8
Petrified Forest National Monument	
Rainbow Bridge National Monument	160
Shoshone Cavern National Monument	210
Sitka National Monument	51.26

Woodrow Wilson (1913-1921)

Bandelier National Monument	23,352
Cabrillo National Monument	.50
Capulin Mountain National Monument	640.42
Casa Grande National Monument	480
Dinosaur National Monument	80
Gran Quivira National Monument	
Katmai National Monument	1,088,000
Mount Olympus National Monument	
Mukuntuweap (Zion) National Monument	76,800

Natural Bridges National Monument	2,740
Old Kasaan National Monument	43
Papago Saguaro National Monument	2,050.43
Scotts Bluff National Monument	2,503.83
Sieur de Monts National Monument	5,000
Walnut Canyon National Monument	960
Verendrye National Monument	253.04
Yucca House National Monument	10

W.G. Harding (1921-1923)

Bryce Canyon National Monument	7,440
Carlsbad Cave National Monument	719.22
Fossil Cycad National Monument	320
Hovenweep National Monument	285.8
Lehman Caves National Monument	593.03
Mound City Group National Monument	57
Papago Saguaro	-110
Pinnacles National Monument	
Pipe Spring National Monument	0
Timpanogos Cave National Monument	250

Calvin Coolidge (1923-1929)

Castle Pinckney National Monument	3.5
Chaco Canyon National Monument	
Chiricahua National Monument	3,655.12
Craters of the Moon National Monument	22,651.8
Dinosaur National Monument	
Father Millet Cross National Monument	.0074
Fort Marion (Castillo de San Marcos) National Monument	18.51
Fort Matanzas National Monument	1.00
Fort Pulaski National Monument	20
Glacier Bay National Monument	2,560,000
Lava Beds National Monument	45,589.92
Meriwether Lewis National Monument	50
Pinnacles National Monument	
Statue of Liberty National Monument	2.5
Wupatki National Monument	2,234.1

Herbert Hoover (1929-1933)

Arches National Monument	4,520
Bandelier National Monument	
Black Canyon of the Gunnison National Monument	10,287.95
Colorado National Monument	
Craters of the Moon National Monument	
Death Valley National Monument	1,601,800
Grand Canyon II National Monument	273,145
Great Sand Dunes National Monument	35,528.36
Holy Cross National Monument	1,392
Katmai National Monument	
Mount Olympus National Monument	
Petrified Forest National Monument	11,010
Pinnacles National Monument	

Saguaro National Monument	53,510.08
Scotts Bluff National Monument	
Sunset Crater National Monument	3,040
White Sands National Monument	131,486.84

Franklin Delano Roosevelt (1933-1945)

Arches National Monument	29,160
Big Hole Battlefield National Monument	195
Black Canyon of the Gunnison National Monument	2,860
Capitol Reef National Monument	37,060
Cedar Breaks National Monument	5,701.39
Channel Islands National Monument	1,119.98
Craters of the Moon	deletion of unknown size
Death Valley National Monument	305,920
Fort Jefferson National Monument	47,125
Fort Laramie National Monument	214.41
Fort Matanzas National Monument	
Glacier Bay National Monument	904,960
Grand Canyon II	-71,854
Jackson Hole National Monument	210,950
Joshua Tree National Monument	825,340
Katmai National Monument	
Meriwether Lewis National Monument	33,631.2
Montezuma Castle National Monument	
Mukuntuweap (Zion) National Monument	49,150
Organ Pipe Cactus National Monument	330,690
Pinnacles National Monument	4,589.26
Scotts Bluff National Monument	46.17
Santa Rosa Island National Monument	9,500
Statue of Liberty National Monument	
Tonto National Monument	
Tuzigoot National Monument	42.67
Walnut Canyon National Monument	
White Sands National Monument	158.91

Harry S. Truman (1945-1953)

Aztec Ruins National Monument	1
Channel Islands National Monument	25,600
Death Valley National Monument	40
Effigy Mounds National Monument	1,204
Fort Matanzas National Monument	179
Great Sand Dunes National Monument	
Hovenweep National Monument	80
Hovenweep National Monument	81
Lava Beds National Monument	211
Muir Woods National Monument	504
Sitka National Monument	54.30

Dwight D. Eisenhower (1953-1961)

Arches National Monument	-240
Bandelier National Monument	3,600
Black Canyon of the Gunnison National Monument	-470

Cabrillo National Monument	80
Capitol Reef National Monument	3,040
Chesapeake and Ohio Canal National Monument	4,800
Colorado National Monument	-91
Edison Laboratory National Monument	1
Fort Pulaski National Monument	2
Glacier Bay National Monument	-24,925
Great Sand Dunes National Monument	-8,805
Hovenweep National Monument	
White Sands National Monument	478
<u>John F. Kennedy (1961-1963)</u>	
Bandelier National Monument	-1,043
Buck Island Reef National Monument	850
Craters of the Moon National Monument	5,360
Gila Cliff Dwellings National Monument	375
Natural Bridges National Monument	4,916
Russell Cave National Monument	310
Saguaro National Monument	15,360
Timpanogos Cave National Monument	
<u>Lyndon B. Johnson (1963-1969)</u>	
Arches National Monument	48,943
Capitol Reef National Monument	215,056
Katmai National Monument	94,547
Marble Canyon National Monument	26,080
Statue of Liberty National Monument	48
<u>Richard M. Nixon (1969-1973)</u>	
<u>Gerald R. Ford (1973-1977)</u>	
Buck Island National Monument	30
Cabrillo National Monument	56
<u>Jimmy Carter (1977-1981)</u>	
Admiralty Island National Monument	1,100,000
Aniakchak National Monument	350,000
Becharof National Monument	1,200,000
Bering Land Bridge National Monument	2,590,000
Cape Krusenstern National Monument	560,000
Denali National Monument	3,890,000
Gates of the Arctic National Monument	8,220,000
Glacier Bay National Monument	550,000
Katmai National Monument	1,370,000
Kenai Fjords National Monument	570,000
Kobuk Valley National Monument	1,710,000
Lake Clark National Monument	2,500,000
Misty Fiords National Monument	2,285,000
Noatak National Monument	5,800,000
Wrangell-St. Elias National Monument	10,950,000
Yukon-Charley National Monument	1,730,000
Yukon Flats National Monument	10,600,000

Ronald W. Reagan (1981-1989)

George Herbert Walker Bush (1989-1993)

MONUMENTS ON THE COLORADO PLATEAU

Exhibit -- F

Monument	Specific Object(s)	Categorical Object(s)	Initial Reservation	Subsequent History/ Current Status	President
Montezuma Castle, AZ. Proc. No. 696 (Dec. 8, 1906), 34 Stat. 3265	"prehistoric object know as Montezuma's Castle ... of the greatest ethnological value and scientific interest" (Proc. No. 696); "prehistoric ruins and ancient cliff dwellings ... of great interest to the public" (Proc. No. 2226)	"greatest ethnological and scientific interest" (Proc. No. 696).	161.39 acres	Boundary enlarged by Proc. No. 2226 (Feb. 23, 1937), 50 Stat. 1817; Act of Oct. 19, 1943, 57 Stat. 572 (adding a "detached unit"); Act of June 23, 1959, 73 Stat. 108; Act of Nov. 10, 1978, 92 Stat. 3474. Now NM of 840.86 acres.	T. Roosevelt
Chaco Canyon, NM. Proc. No. 740 (March 11, 1907), 35 Stat. 2119	"extensive prehistoric communal or pueblo ruins ... of extraordinary interest because of their number and their great size and because of the innumerable and valuable relics of a prehistoric people which they contain" (Proc. No. 740)		10,643.13 acres	Boundary enlarged by Proc. No. 1826 (Jan. 10, 1928), 45 Stat. 2937. Redesignated and renamed Chaco Culture National Historic Park (NHP) by the Act of Dec. 19, 1980, 94 Stat. 3221, 3227. Now a NHP of 31,084.74 acres.	T. Roosevelt
Grand Canyon "I," AZ. Proc. No. 794 (Jan. 11, 1908), 35 Stat. 2175	"an object of unusual scientific interest, being the greatest eroded canyon within the United States" (Proc. No. 794)	"an object of unusual scientific interest" (Proc. No. 794)	808,120 acres	Now part of Grand Canyon NP, 1,180,617.78 acres; Act of Feb. 26, 1919, 40 Stat. 1175 (codified at 16 U.S.C. §§ 221 et seq.). (Subsequent boundary changes: establishment of Grand Canyon "II" NM, Proc. No. 2022 (Dec. 22, 1932), 47 Stat. 2547; Marble Canyon NM, Proc. No. 3889 (Jan. 20, 1969), 83 Stat. 924; Grand Canyon NP, Act of Jan. 3, 1975, 33 Stat. 2089, incorporating original	T. Roosevelt

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Monument	Specific Object(s)	Categorical Object(s)	Initial Reservation	Subsequent History/ Current Status	President
				Grand Canyon NP, Grand Canyon "II" NM, Marble Canyon NM, and portions of Glen Canyon and Lake Mead National Recreation Areas).	
Natural Bridges, UT. Proc. No. 804 (April 16, 1908), 35 Stat. 2183	"a number of natural bridges ... having heights more lofty and spans far greater than any heretofore known to exist ... of the greatest scientific interest ... extraordinary examples of stream erosion" (Proc. No. 804); "prehistoric cave springs" (Proc. No. 881); "additional cliff-type prehistoric Indian ruins" (Proc. No. 3486)	"greatest scientific interest" (Proc. No. 804)	120.00 acres	Boundary enlarged - Proc. No. 881 (Sept. 25, 1909), 36 Stat. 2502; Proc. No. 1323 (Feb. 11, 1916), 39 Stat. 1764; Proc. No. 3486 (Aug. 14, 1962), 76 Stat. 1495. Now NM of 7,636.49 acres.	T. Roosevelt
Navajo, AZ. Proc. No. 873 (March 20, 1909), 36 Stat. 2491.	"a number of prehistoric cliff dwellings and pueblo ruins ... which are new to science and wholly unexplored, and because of their isolation and size are of the very greatest ethnological, scientific and educational interest" (Proc. No. 873)	"very greatest ethnological, scientific and educational interest" (Proc. No. 873)	360.00 acres	Boundary reduced - Proc. No. 1186 (March 14, 1912), 37 Stat. 1733. Now NM of 360.00 acres.	Wm. H. Taft
Mukuntuweap (Zion), UT. Proc. No. 877 (July 31, 1909), 36 Stat. 2498.	"Mukuntuweap Canyon... is an extraordinary example of canyon erosion" (Proc. No. 877); "to the prehistoric races of America and to the ancestral	"greatest scientific interest" (Proc. No. 877); "natural features of unusual archaeological, geologic, and geographic interest" (Proc.	16,000.00 acres	Name changed and boundary enlarged - Proc. No. 1435 (March 18, 1918), 40 Stat. 1760. Now Natl. Park (Zion NP) - 142,542.05 acres; Act of Nov. 19, 1919, 41 Stat. 356 (several subsequent	Wm. T. Taft

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Monument	Specific Object(s)	Catagorical Object(s)	Initial Reservation	Subsequent History/ Current Status	President
	Indian tribes, ... the geologic features include craters of extinct volcanoes, fossiliferous deposits of unusual nature, and brilliantly colored strata of unique composition, among which are some believed to be the best representatives in the world of a rare type of sedimentation ... the features of geographic interest include a labyrinth of remarkable canyons with highly ornate and beautifully colored walls, in which are plainly recorded the geologic events of past ages" (Proc. No. 1435)	No. 1435)		boundary changes)	
Rainbow Bridge, UT. Proc. No. 1043 (May 30, 1910), 36 Stat. 2703.	"an extraordinary natural bridge, having an arch which is in form and appearance much like a rainbow, and which is three hundred and nine feet high and two hundred and seventy-eight feet span ... of great scientific interest as an example of eccentric stream erosion" (Proc. No. 1043)	"great scientific interest" (Proc. No. 1043)	160 acres	now NM of 160.00 acres.	Wm. H. Taft
Colorado, CO. Proc. No. 1126 (May 24,	"extraordinary examples of erosion ... of great scientific	"great scientific interest ... natural formations" (Proc.	13,466.21 acres	Boundary enlarged - Proc. No. 2037 (March 3, 1933), 47 Stat. 2563;	Wm. H. Taft

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Monument	Specific Object(s)	Categorical Object(s)	Initial Reservation	Subsequent History/ Current Status	President
1911), 37 Stat. 1631.	interest ... natural formations" (Proc. No. 1126)	No. 1126); "features of historical and scientific interest" (Proc. No. 2037)		boundary revised - Proc. No. 3307 (Aug. 7, 1959), 73 Stat. 69; Oct. 21, 1976). Nov. 10, 1978. Now NM of 19,925.91 acres.	
Dinosaur, CO. Proc. No. 1313 (Oct. 4, 1915), 39 Stat. 1752.	"an extraordinary deposit of Dinosaurian and other gigantic reptilian remains of the Juratrias period, which are of great scientific interest and value" (Proc. No. 1313)	"great scientific interest and value" (Proc. No. 1313); "various objects of historic and scientific interest" (Proc. No. 2290)	80.00 acres	Boundary enlarged - Proc. No. 2290 (July 14, 1938), 53 Stat. 2454; Act of Sept. 8, 1960, 74 Stat. 857. Boundaries enlarged by Notice of the Secretary of the Interior, Feb. 21, 1963, March 27, 1964, Notice of the Asst. Secretary of the Interior, Oct. 6, 1964, and Notice of the Dir. of the NPS, Aug. 27, 1985. Now NM of 204,355.49 acres.	Woodrow Wilson
Walnut Canyon, AZ Proc. No. 1318 (Nov. 30, 1915), 39 Stat. 1761.	"certain prehistoric ruins of ancient cliff dwellings ... of great ethnologic, scientific, and educational interest" (Proc. No. 1318)	"great ethnologic, scientific, and educational interest" (Proc. No. 1318); "various objects of historic and scientific interest" (Proc. No. 2300)	960.00 acres	Transferred from NFS to NPS, Aug. 10, 1933; boundary enlarged - Proc. No. 2300 (Sept. 24, 1938), 53 Stat. 2469. Now NM of 2,011.62 acres.	Woodrow Wilson
Bandelier, NM. Proc. No. 1322 (Feb. 11, 1916), 39 Stat. 1764	"certain prehistoric ruins ... of unusual ethnologic, scientific, and educational interest ... relics of a vanished people" (Proc. No. 1322); "pueblo-type archaeological ruins" (Proc. No. 3388); "prehistoric aboriginal ruins ... unusual	"unusual ethnologic, scientific, and educational interest" (Proc. No. 1322)	23,352.00 acres	Transferred from NFS to NPS, Feb. 25, 1932; boundary enlarged - Proc. No. 1991 (Feb. 25, 1932), 47 Stat. 2503; Proc. No. 3388 (Jan. 9, 1961), 75 Stat. 1014; Proc. No. 3539 (May 27, 1963), 77 Stat. 1066; wilderness designated, Act of Oct. 20, 1976, 90 Stat. 2692. Now NM of 32,737.20	Woodrow Wilson

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Monument	Specific Object(s)	Catagorical Object(s)	Initial Reservation	Subsequent History/ Current Status	President
		1664)		boundary changes).	
Chiricahua, AZ. Proc. No. 1692 (April 18, 1924), 43 Stat. 1946	"certain natural formations, known as 'The Pinnacles,' of scientific interest". (Proc. No. 1692)	"scientific interest" (Proc. No. 1692); "objects of historic and scientific interest" (Proc. No. 2288)	3,655.12 acres	Now a NM of 11,982.38 acres	W.G. Harding
Wupatki, AZ. Proc. No. 1721 (Dec. 9, 1924), 43 Stat. 1977.	"two groups of prehistoric ruins built by the ancestors of a most picturesque tribe of Indians still surviving in the United States, the Hopi or People of Peace" (Proc. No. 1721)	"prehistoric remains" (Proc. No. 1721); "prehistoric and archaeological ruins of historic and scientific interest" (Proc. No. 2243)	2234.10 acres	Boundary enlarged - Proc. No. 2243 (July 9, 1937), 50 Stat. 1841; lands excluded - Proc. No. 2454 (Jan. 22, 1941), 55 Stat. 1608; boundary revised - Act of Aug. 10, 1961, 75 Stat. 337. Now NM 35,253.24 acres.	Calvin Coolidge
Arches, UT. Proc. No. 1875 (April 12, 1929), 46 Stat. 2988.	"extraordinary examples of wind erosion in the shape of gigantic arches, natural bridges, "windows," spires, balanced rocks, and other unique wind-worn sandstone formations, the preservation of which is desirable because of their educational and scenic value" (Proc. No. 1875)	"educational and scenic value" (Proc. No. 1875); "geologic and prehistoric structures of historic and scientific interest" (Proc. No. 2312); "outstanding interest" (Proc. No. 3360); "objects of geological and scientific interest to complete the geologic story presented at the monument" (Proc. No. 3887)	4,833.63 acres	Boundary enlarged - Proc. No. 2312 (Nov. 25, 1938) 53 Stat. 2504; boundary revised - Proc. No. 3360 (July 22, 1960), boundary revised - Proc. No. 3360 (July 22, 1960), 74 Stat. c79; boundary enlarged - Proc. No. 3887 (Jan. 20, 1969), 83 Stat. 920. Now Natl. Park (Arches NP) - 66,343.51 acres; Act of Nov. 12, 1971, 85 Stat. 422 (codified at 16 U.S.C. § 272).	Herbert Hoover, F.D. Roosevelt, Dwight D. Eisenhower, L.B. Johnson
Sunset Crater, AZ. Proc. No. 1911 (May 26, 1930), 46 Stat. 3023.	(Establishing Proc. No. 1911 lists no specific objects)	"certain geologic formations ... of scientific and public interest" (Proc. No. 1911)	3,040.00 acres	Transferred from NFS to NPS, Aug. 10, 1933. Name changed to Sunset Crater Volcano NM by Pub. L. 101-612, Nov. 16, 1990, 104 Stat. 3222.	Herbert Hoover

All acreage figures are estimated federal acreage where available, but may in some cases be total acreage.

Monument	Specific Object(s)	Catagorical Object(s)	Initial Reservation	Subsequent History/ Current Status	President
2221 (Jan. 22, 1937), 50 Stat. 1809	scientific value, and ... various other objects of geological and scientific interest" (Proc. No. 2221)	scientific interest" (Proc. No. 2221)	acres	11, 1956, 70 Stat. 527. Subsequent boundary changes. Now a NP of 143,040.40.	Roosevelt
Capitol Reef, UT. Proc. No. 2246 (Aug. 2, 1937), 50 Stat. 1856	"narrow canyons displaying evidence of ancient sand dune deposits of unusual scientific value, and ... various other objects of geological and scientific interest" (Proc. No. 2246)	"geological and scientific interest" (Proc. No. 2246)	32,607.31 acres	Boundary enlarged by Proc. No. 3249 (July 2, 1958), 72 Stat. 48; Proc. No. 3888 (Jan. 20, 1969), 83 Stat. 922. Redesignated Capitol Reef NP by the Act of Dec. 18, 1971, 85 Stat. 739, codified at 16 U.S.C. § 273. Now a NP of 222,753.35	F.D. Roosevelt, Dwight D. Eisenhower, L.B. Johnson
Marble Canyon, AZ. Proc. No. 3889 (Jan. 20, 1969), 83 Stat. 924	"the Marble Canyon of the Colorado River in Arizona, a northerly continuation of the world-renowned Grand Canyon, possesses unusual geologic and paelontologic features and objects and other scientific and natural values" (Proc. No. 3889)	"unusual geologic and paelontologic features and objects and other scientific and natural values" (Proc. No. 3889)	32,546.69 acres	Now part of Grand Canyon NP, established by the Act of Jan. 3, 1975, 88 Stat. 2089, incorporating the existing Grand Canyon NP, Grand Canyon II NM, Marble Canyon NM, and portions of Glen Canyon and Lake Mead National Recreation Areas. Now part of a NP of 1,189,641.37	Lyndon B. Johnson

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